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PART II

ENVIRONMENTAL PROTECTION AGENCY

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NATIONAL AMBIENT AIR QUALITY STANDARDS

Notice of Proposed Regulations for Preparation, Adoption, and Submittal of Implementation Plans

ENVIRONMENTAL PROTECTION AGENCY

[42 CFR Part 420]

NATIONAL AMBIENT AIR QUALITY STANDARDS

Preparation, Adoption, and Submittal of Implementation Plans

On or about April 30, 1971, pursuant to section 109 of the Clean Air Act, as amended, the Administrator will promulgate national ambient air quality standards for sulfur oxides, particulate matter, carbon monoxide, photochemical oxidants, hydrocarbons, and nitrogen oxides. Within 9 months thereafter, each State is required by section 110 of the Act to adopt and submit to the Administrator a plan which provides for the implementation, maintenance, and enforcement of such national ambient air quality standards within each air quality control region (or portion thereof) within the State. An additional period of no longer than 18 months may be allowed for adoption and submittal of that portion of a plan relating to implementation of secondary ambient air quality standards. State plans must provide for attainment of national primary ambient air quality standards within 3 years after the date of the Administrator's approval of such plans, except that a 2-year extension of this deadline may be granted by the Administrator upon application by a Governor if the application satisfies the requirements set forth in section 110(e) of the Act. State plans must provide for attainment of national secondary ambient air quality standards within a reasonable time. Within 4 months from the date on which State plans are required to be submitted, the Administrator must either approve or disapprove such plans or portions thereof. The regulations proposed herein contain the requirements to be met in preparing, adopting, and submitting implementation plans, and in requesting extensions of the time deadlines set forth in the Act. The proposal also sets forth the factors which the Administrator will take into consideration in reviewing State plans and evaluating requests for extensions.

It is recognized that States will require assistance from the Environmental Protection Agency in preparing implementation plans conforming to the requirements proposed herein. The Agency will furnish such assistance through its Regional Air Pollution Control Directors.

Interested persons may submit written comments on the proposed regulations in triplicate to the Office of the Associate Commissioner, Air Pollution Control Office, Environmental Protection Agency, 411 West Chapel Hill St., Durham, NC 27701. All relevant comments postmarked not later than 21 days after publication of this notice will be considered. The regulations, modified as the Administrator deems appropriate after consideration of comments, will be effective upon the date of their republication in the FEDERAL REGISTER.

This notice of proposed rule making is issued under the authority of section 301(a) of the Clean Air Act (42 U.S.C. 1857g(a), as amended by section 15(c)(2) of Pub. Law 91-604, 84 Stat. 1713).

Dated: March 30, 1971.

WILLIAM D. RUCKELSHAUS,
Administrator,
Environmental Protection Agency.

A new Part 420 would be added to Chapter IV, Title 42, Code of Federal Regulations, as follows:

PART 420—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMISSION OF PLANS

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Subpart A—General Provisions

§ 420.01 Definitions.

As used in this part, all terms not defined herein shall have the meaning given them in the Act:

(a) "Act" means the Clean Air Act (42 U.S.C. 1857–1857l, as amended by Public Law 91–604, 84 Stat. 1676).

(b) "Administrator" means the Administrator of the Environmental Protection Agency.

(c) "Primary standard" means a national primary ambient air quality standard promulgated pursuant to section 109 of the Act.

(d) "Secondary standard" means a national secondary ambient air quality promulgated pursuant to section 109 of the Act.

(e) "National standard" means either a primary or a secondary standard.

(f) "Plan" means an implementation plan, under section 110 of the Act, to attain and maintain a national standard.

(g) "Regional Director" means a Regional air pollution control Director of the Environmental Protection Agency.

(h) "State agency" means the air pollution control agency primarily responsible for development and implementation of a plan under the Act.

(i) "Local agency" means any air pollution control agency, other than a State agency, which is charged with responsibility for carrying out part of a plan.

(j) "Region" means (1) an air quality control region designated by the Secretary of Health, Education, and Welfare or the Administrator (2) any area designated by a State as an air quality control region under subparagraph (1) or (2) of this paragraph.

§ 420.02 Classification of regions.

This section establishes a classification system to categorize regions for purposes of plan development and evaluation. The requirements of this part vary according to the classification of each region, in order that the time and resources to be expended in developing the plan for that region, as well as the substantive content of that plan, will be commensurate with the complexity of the air pollution problem. The classification will be based upon measured ambient air quality, where known, or, where not known, estimated air quality in the area of maximum pollutant concentration. All regions will be classified by the Administrator after consultation with State governments. Each region will be classified separately with respect to each of the following pollutants: sulfur oxides, particulate matter, carbon monoxide, nitrogen dioxide, and photochemical oxidants.

(a) For sulfur oxides and particulate matter, each region will be classified into one of three categories, defined as Priority I, Priority II, or Priority III.

(1) (i) Ambient concentration limits (expressed as micrograms per cubic meter) which define the classification system for sulfur oxides and particulate matter are:

Pollutant	Priority		
	I	II	III
	Greater than	*From—To*	*Less than*
Sulfur oxides:			
Annual arithmetic mean	100	60–100	60
24-hour maximum	455	260–455	260
Particulate matter:			
Annual geometric mean	95	60–95	60
24-hour maximum	325	150–325	150

(ii) The more restrictive classification will be chosen where there is a difference between the 24-hour maximum value and the annual average, e.g., if a region is Priority I with respect to an annual average and Priority II with respect to a 24-hour maximum value, the classification will be Priority I.

(2) The procedures which will be used to estimate air quality in regions where no measured data or inadequate data exist are described in Appendix A to this part.

(b) For carbon monoxide, nitrogen dioxide, and photochemical oxidants, each region will be classified into one of two categories, defined as Priority I or Priority III.

(1) Ambient concentration limits which define the classification system are:

(i) Carbon monoxide: Priority I: Equal to or above 21 milligrams per cubic meter, 1-hour maximum, or 14 milligrams per cubic meter, 8-hour maximum; Priority III: Below both of such values.

(ii) Nitrogen dioxide: Priority I: Equal to or above either of the primary standards; Priority III: Below both of the primary standards.

(iii) Photochemical oxidants: Priority I: Equal to or above 170 micrograms per cubic meter, 1-hour maximum; Priority III: Below such value.

(2) In the absence of measured data to the contrary, classification with respect to carbon monoxide, photochemical oxidants and nitrogen dioxide will be based on the following estimate of the relationship between these pollutants and population: Any region containing a metropolitan area whose 1970 "urban place" population, as defined by the U.S. Bureau of Census, exceeds 200,000 will be classified as Priority I. All other regions will be classified as Priority III.

(3) Classifications with respect to hydrocarbons will be the same as the classifications with respect to photochemical oxidants.

§ 420.03 Public hearings.

(a) Each State shall, prior to adoption of a plan and after reasonable notice thereof, conduct one or more public hearings on the plan. Separate hearings may be held for plans to implement primary and secondary standards.

(b) For purposes of this part, "reasonable notice" shall be considered to be notice given at least 21 days prior to the date of the hearings. In the case of an interstate region, "reasonable notice" shall be considered to include notice to the State agency of any other State a portion of which is included in the region, and to any local agencies in such other State's portion of the region.

(c) States shall prepare and retain, for submission to the Administrator upon his request, a record of the hearing(s). The record shall contain, as a minimum, a list of witnesses together with a summary of each presentation.

(d) Each State shall submit with its plan (1) a copy of the notice required by this section; and (2) a certification that the hearing was held in accordance with the notice.

§ 420.04 Submission of plans; preliminary review of plans.

(a) Submission to the Administrator shall be accomplished by delivering five copies of the plan to the appropriate Regional Director and a letter to the Administrator notifying him of such action. Plans shall be adopted by each State and submitted to the Administrator by the Governor as follows:

(1) For any primary standard, within 9 months after promulgation of such standard.

(2) For any secondary standard, within 9 months after promulgation of such secondary standard or by such later date prescribed by the Administrator pursuant to Subpart C of this part.

(b) Upon request of a State agency, the Administrator will provide preliminary review of a plan or portion thereof submitted in advance of the date such plan is due. Such requests shall be made in writing to the appropriate Regional Director, and shall be accompanied by five copies of the material for which review is sought. Such requests shall be made no later than 90 days prior to the date on which a plan is required to be submitted. Requests for preliminary review shall not operate to relieve a State from the responsibility of adopting and submitting plans in accordance with prescribed due dates.

§ 420.05 Revisions.

(a) The plan shall provide for its revision from time to time as may be necessary to take account of:

(1) Revisions of national standards,

(2) The availability of improved or more expeditious methods of achieving such standards, or

(3) A finding by the Administrator that the plan is substantially inadequate to achieve or maintain the national standard which it implements.

(b) The plan shall be revised within 60 days following notification by the Administrator under paragraph (a) of this section, or by such later date prescribed by the Administrator after consultation with the State. Where required by the Administrator or the laws of the State, such revisions shall be adopted after reasonable notice and public hearings.

§ 420.06 Reports.

(a) For the 3-month period commencing with the approval of a plan by the Administrator, and for each 3-month period thereafter, the State shall submit to the Administrator (through the Regional Director) a report on air quality data that includes data on pollutant concentrations; sampler types; sampling period; time intervals and frequency of sampling; methods of collection and analysis; sampler locations; and elevation and height of sampling stations.

(b) For the 6-month period commencing with the approval of a plan by the Administrator, and for each 6-month period thereafter, the State shall submit to the Administrator (through the Regional Director) reports on progress toward carrying out the plan. Such reports shall include information on: Compliance with time schedules and emission limitations included in the plan, enforcement activities, implementation of permit and registration systems, source tests and monitoring programs, emergency episode regulations, actions taken with respect to variances, progress in acquiring the resources provided for in the plan, and any difficulties which have delayed or may delay the State in carrying out the approved plan.

(c) The reports required by this section shall be submitted within 30 days after the end of the reporting period on forms which shall be prescribed by the Administrator.

§ 420.07 Approval of plans; applicable State plans.

The Administrator shall approve any plan or portion thereof, or any revision of such plan or portion thereof if he determines that it meets the requirements of the Act. The approved plan or any portion thereof shall be the applicable State plan for purposes of the Clean Air Act. Changes or revisions in such plan shall not be considered part of the applicable State plan until such changes or revisions have been approved by the Administrator in accordance with this part.

Subpart B—Plan Content and Requirements

§ 420.10 General requirements.

(a) Each plan shall include such emission limitations and other measures as are necessary for attainment and maintenance of the national standards in each region within the State to which such plan applies. Plans for different regions within a State may be submitted in a single document or in separate documents.

(b) Plans implementing a primary standard shall provide for the attainment of such standard as expeditiously as practicable, but in no case, except as otherwise provided by Subpart C of this part, later than 3 years after the date of the Administrator's approval of such plan.

(c) Plans implementing a secondary standard shall provide for the attainment of such standard within a reasonable time after the date of the Administrator's approval of such plan.

(d) The plan for each region shall have adequate provisions to insure that pollutant emissions within such region will not interfere with attainment and maintenance of the national standards in any portion of such region or in any other region.

(e) Each plan shall include, in accordance with the requirements more specifically set forth in this subpart, separate sections setting forth:

(1) The legal authority to implement such plan.

(2) The emission limitations and other measures to be implemented in order to attain and maintain the national stand-

ards (which emission limitations and other measures, together with timetables for implementing such limitations and other measures, shall be referred to hereinafter as the "control strategy").

(3) The adequacy of the control strategy.

(4) Existing air quality and source emissions.

(5) Systems to be used for surveillance of air quality and emissions.

(6) Procedures and criteria for emergency action.

(7) The resources which are and will be made available for implementation of such plan.

(8) Provisions for intergovernmental cooperation in the formulation and implementation of such plan.

§ 420.11 Legal authority.

(a) The plan shall show that the State agency or agencies directly responsible for implementing the plan have legal authority to implement the plan, including authority to:

(1) Adopt emission standards and limitations and any other measures required by the plan as necessary for attainment and maintenance of national ambient air quality standards.

(2) Enforce applicable laws, regulations, and standards, including authority to seek injunctive relief.

(3) Abate pollutant emissions on an emergency basis to prevent substantial endangerment to public health, i.e., authority comparable to that available to the Environmental Protection Agency under section 303 of the Clean Air Act, as amended.

(4) Establish and operate a statewide system under which permits would be required for the construction and operation of new stationary sources of air pollution and the construction and operation of modifications to existing sources, including authority to prevent such construction, modification, or operation, and any other necessary land use control authority required by the plan.

(5) Obtain information necessary to determine whether air pollution sources are in compliance with applicable laws, regulations, and standards, including authority to require recordkeeping and to make inspections and conduct tests of air pollution sources.

(6) Require owners or operators of stationary sources to install, maintain, and use emission monitoring devices and to make periodic reports to the State on the nature and amounts of emissions from such stationary sources and to make such data available to the public as reported and as correlated with any applicable emission standards.

(7) Carry out a program of inspection and testing of motor vehicles to enforce compliance with applicable emission standards when necessary and practicable, and to impose other necessary controls on transportation provided for in the plan.

(b) The provisions of law or regulation which the State determines provide the authority required under this section shall be specifically identified, and copies of such laws or regulations shall be submitted with the plan.

(c) The plan shall show that the legal authorities specified in this section are available to the State agency or agencies directly responsible for implementing the plan at the time of submission of the plan.

§ 420.12 Control strategy: General.

(a) In any region where measured or estimated ambient levels of a pollutant are above the levels specified by an applicable national standard, the plan shall include a control strategy which shall be shown to provide for the degree of emission reduction necessary for attainment and maintenance of such national standard, including the degree of emission reduction necessary to offset emission increases that can reasonably be expected to result from projected growth of population, industrial activity, motor vehicle traffic, or other factors that may cause or contribute to increased emissions.

(b) In any region where measured or estimated ambient levels of a pollutant are identical to, or below, the levels specified by an applicable secondary standard, the control strategy shall include procedures for preventing such ambient levels from exceeding such secondary standard. Regulations such as those described in section 1.1 of Appendix B to this part will be deemed to fulfill this requirement.

§ 420.13 Control strategy: Sulfur oxides and particulate matter.

(a) In any region where emission reductions are necessary for attainment and maintenance of a primary standard, the control strategy shall provide for the application of such emission limitations or other measures as may be necessary to achieve such emission reductions, including, but not limited to, emission limitations or other measures such as those described in Appendix B to this part.

(b)(1) In any region where application of emission limitations or other measures which are not more stringent than those described in Appendix B to this part will result in attainment and maintenance of a secondary standard, "reasonable time" shall be 3 years or less, unless the State shows good cause why the application of such emission limitations or other measures should be postponed.

(2) Nothing in this subpart shall be construed as requiring or encouraging the adoption or enforcement of emission limitations or other measures which will necessitate restrictions on the use or composition of fuel in stationary sources, except as necessary for attainment of primary standards.

(c) Example region:

(1) A control strategy which provides for the attainment and maintenance of a national standard in one region in a State will be deemed by the Administrator to be adequate for attainment and maintenance of such standard in any or all other regions of the State in which measured or estimated levels of the pollutant are lower than those in the region for which the control strategy was formulated, provided that such control strategy is sufficiently comprehensive to include adequate controls on sulfur oxides and particulate emissions from sources listed in Appendix C to this part. Any region (i) for which the State formulates a control strategy which is applied to other regions or (ii) for which a control strategy is developed, without regard to whether such strategy is applied outside of the region, is referred to hereinafter as an "example region."

(2) The State shall obtain, through the Regional Director, the concurrence of the Administrator in the selection of an example region.

(d) Adequacy of control strategy:

(1) The plan shall demonstrate that the control strategy for each national standard is adequate for attainment and maintenance of such standard in the example region(s) to which it applies. The adequacy of a control strategy shall be demonstrated by means of a proportional model or diffusion model.

(2) The proportional model shall be one in which the following equation is employed to calculate the degree of improvement in air quality needed for attainment of a national standard:

$$\frac{A-C}{A-B}\times 100 = \text{percent reduction needed}$$

Where:

A = Existing air quality at the location having the highest measured or estimated concentration in the region.
B = Background concentration.
C = National standard.

The plan shall show that application of the control strategy will result in the degree of emission reduction indicated to be necessary by the above calculation. The plan shall contain a summary of the computations used to determine the emission reductions that will result from application of the control strategy to each point source and group of area sources; such summary shall be included in a table similar to that presented in Appendix D to this part. The detailed computations shall be retained and be made available for inspection by the Administrator.

(3) (i) If a diffusion model is used it shall be identified and described; provided, however, that if either of the two diffusion models described in the following publications is used, it need only be identified:

Air Quality Implementation Planning Program (IPP), Volume I, Operator's Manual, National Air Pollution Control Administration, Environment Protection Agency, Washington, D.C., November 1970.

Air Quality Display Model (AQDM), National Air Pollution Control Administration, Department of Health, Education, and Welfare, Washington, D.C., November 1969.

(ii) The plan shall contain a summary of emission levels expected to result from application of the control strategy, which summary shall be included in a table similar to that presented in Appendix D to this part.

(iii) The plan shall also show the air quality levels expected to result from application of the control strategy, pre-

sented either in tabular form or as an isopleth map showing maximum pollutant concentrations and expected concentration gradients. Computer printouts of the input and output data associated with use of a diffusion model shall be retained and made available for inspection by the Administrator.

(4) Appendix B to this part contains examples of emission limitations and other measures directly applicable or adaptable to point sources and area sources. This subpart shall not be construed to require that such limitations or measures be applied solely to area sources or solely to point sources.

(e) Emissions data:

(1) Each plan shall include the following data on emissions of sulfur oxides and particulate matter:

(i) For each example region in the State a detailed inventory of emissions from point sources and area sources in each county shall be summarized in a form similar to that shown in Appendix D to this part, and the data described in Appendices E and F to this part shall be retained and made available for inspection by the Administrator.

(ii) For all other regions, point-source and area-source data shall be submitted in summary form as shown in Appendix G, except that for regions classified as Priority III, only point-source data and any existing area-source data shall be submitted. Data shown in Appendices E and F to this part shall be retained and made available for inspection by the Administrator.

(2) As used in this section, a "point source" is:

(i) Any stationary source causing emissions in excess of twenty-five (25) tons per year of any pollutant for which there is a national standard, or

(ii) Without regard to quantity of emissions, any source listed in Appendix C to this part.

(3) As used in this section, an "area source" is any small residential, government, institutional, commercial, or industrial fuel combustion operation; onsite waste disposal facility; motor vehicles, aircraft, vessels, or other transportation facilities; or other miscellaneous sources such as those listed in Appendix D to this part, as identified through inventory techniques similar to those described in: "A Rapid Survey Technique for Estimating Community Air Pollution Emissions," Public Health Service Publication No. 999–AP–29, October 1966.

(f) Air quality data: Data showing existing air quality with respect to sulfur oxides and particulate matter shall be submitted for each example region. Actual measurements shall be used where available. If actual measurements are not available and cannot be made in time to be employed in the development of the control strategy, air quality may be estimated by the procedure described in Appendix A to this part. Air quality data, whether measured or estimated, shall be submitted in the form shown in Appendix H to this part.

§ 420.14 Control strategy: Carbon monoxide, hydrocarbons, photochemical oxidants, and nitrogen dioxide.

(a) *Priority I Regions.* (1) Each plan for a region classified as Priority I shall include a control strategy which shall provide for the degree of emission reduction necessary for attainment and maintenance of the national standards after consideration of the emission reductions that will result from the application of Federal motor vehicle emission standards promulgated by the Administrator pursuant to section 202 of the Act.

(2) Unless specific data are available for a region, a State shall assume that such Federal motor vehicle emission standards will result in the emission reductions shown in Appendix I to this part. If specific data are used, such data must be submitted in the plan for such region.

(b) *Priority III Regions.* For a region classified as Priority III, a control strategy need include only procedures for preventing ambient levels of a pollutant from exceeding the applicable primary standard. Regulations such as those described in section 1.1 of Appendix B to this part will be deemed to fulfill this requirement.

(c) *Control strategy development.* In a region in which attainment and maintenance of a national standard will require emission reductions in addition to those which will result from application of the Federal motor vehicle emission standards, the control strategy shall provide for application of such emission limitations or other measures as may be necessary for attainment and maintenance of such national standard, including, but not limited to the following:

(1) Emission limitations or other measures such as those described in Appendix B to this part.

(2) Emission limitations necessitating installation of emission control devices or systems on in-use motor vehicles, which limitations may be assumed to be capable of producing the emission reductions shown in Appendix I to this part.

(3) Emission limitations necessitating conversion of motor vehicle fleets, including commercial and governmental fleets, to use liquified natural gas or liquified petroleum gas or other low-emission fuels or engines.

(4) Measures to reduce motor vehicle traffic, particularly rush-hour traffic, including measures such as commuter taxes, gasoline rationing, parking limitations, staggered working hours, or restrictions on motor vehicle idling time.

(5) Expansion or promotion of the use of mass transportation facilities through measures such as increases in frequency, convenience, and passenger-carrying capacity of mass transportation systems; subsidization of the costs of operating such systems; providing for special bus lanes on major streets and highways; or other incentives to efficient operation and use of such systems.

(6) At such time as they are determined by the Administrator to be feasible and practicable, programs for periodic inspection and testing of motor vehicle emission control systems.

(d) *Adequacy of control strategy.* (1) The plan shall demonstrate that the control strategy included in each plan for a region classified as Priority I is adequate for attainment and maintenance of the national standard(s) to which such control strategy applies, by means of a proportional model or diffusion/photochemical model.

(i) With respect to control of carbon monoxide and nitrogen oxides, the proportional model to be used for purposes of this paragraph is described in § 420.13(d)(2), provided, with respect to the national standards for nitrogen dioxide, that the degree of air quality improvement indicated to be necessary by the proportional model will be achieved by a corresponding degree of reduction of total nitrogen oxides emissions from stationary and mobile sources.

(ii) With respect to control of hydrocarbons and photochemical oxidants, it may be assumed that the degree of total hydrocarbon emission reduction necessary for attainment and maintenance of the primary standards for photochemical oxidants will also be adequate for attainment of the primary standard for hydrocarbons. The proportional model to be used to determine the necessary reduction is set forth in Appendix J to this part.

(2) The plan shall show that the control strategy will result in the degree of emission reduction indicated to be necessary by the proportional model. The plan shall contain a summary of the computations used to determine the emission reductions that will result from application of the control strategy to each point source and each group of area sources. Such summary shall be included in a table similar to that presented in Appendix D to this part. The detailed computations shall be retained by the State and made available for inspection by the Administrator.

(3) If a diffusion/photochemical model is used, the plan shall include a description of such model.

(e) *Emission data.* Emission data on carbon monoxide, hydrocarbons, photochemical oxidants, and nitrogen oxides shall be submitted in accordance with the requirements in § 420.13(e).

(f) *Air quality data.* Data showing existing air quality levels shall be presented in accordance with this section:

(1) For Priority I regions, data on carbon monoxide, nitrogen dioxide, and photochemical oxidants shall, as a minimum, include the results of measurements made during the period July 1, 1971, through September 30, 1971, in accordance with the following procedures:

Pollutant	Sampling methods	Number of sites per region	Frequency of sampling
Carbon monoxide	Nondispersive infrared or equivalent.[1]	One	Continouus.
Nitrogen dioxide	24-hour (gas bubbler) method (Jacobs-Hochheiser) or equivalent.[2]	do	One 24-hour sample, once every 3 days.
Photochemical oxidants	Neutral KI colorimetric (gas bubbler) or equivalent.[3]	do	Continuous if equipment is available; otherwise, four 1-hour samples taken between 11 a.m. and 3 p.m. local time, 5 days per week.

[1] Equivalent methods are gas chromatographic and mercury replacement.
[2] Equivalent methods are continuous Saltsman and coulometric.
[3] Equivalent methods are chemiluminescence and coulometric.

(2) For Priority I regions, only available air quality data for hydrocarbons must be submitted.

(3) For Priority III regions, no air quality data for carbon monoxide, hydrocarbons, nitrogen oxides, and photochemical oxidants need be submitted.

(4) Air quality data required by this subparagraph shall be submitted in the form similar to that shown in Appendix H to this part.

§ 420.15 Emergency action criteria and procedures.

Plans for Priority I and Priority II regions shall include criteria and procedures for initiating emission control actions commensurate with the severity of air pollution conditions in an emergency episode situation in accordance with the requirements of this section.

(a) Plans for Priority I and Priority II regions shall specify as episode criteria ambient pollutant concentrations at which control actions will be taken to reduce or prohibit emissions and shall provide for such actions to be taken when the specified concentrations are reached at any one monitoring site in the region. The control actions to be taken shall be identified by episode criteria level. Acceptable episode criteria and control actions are set forth in Appendix B to this part.

(b) Plans for Priority I regions shall include the following elements:

(1) Episode surveillance system:

(i) The air quality surveillance system in each such region shall include one or more air monitoring stations capable of providing data sufficiently rapidly to permit prompt identification of situations in which pollutant concentrations have reached, or are increasing toward, applicable episode criteria levels.

(ii) Each plan shall provide for daily acquisition of forecasts of atmospheric stagnation conditions and shall further provide that, during periods of atmospheric stagnation or any episode stage, such forecasts shall be updated at least every 12 hours.

(iii) Each plan shall provide for inspection of sources to ascertain compliance with applicable emission reduction requirements.

(2) Each plan shall include an emission reduction plan which shall include prescribed action for reduction of pollutant emissions at each episode criteria level. Such emission reduction plan shall include specific emission reduction action plans for each major source of pollution (100 tons per year, or more). An acceptable episode control regulation is set forth in Appendix B to this part.

(3) Each plan shall provide for communications procedures for transmitting status reports and orders as to control actions to be taken during any episode stage, including procedures for contact with public officials, major emissions sources, public safety and emergency agencies, and news media. Such communications procedures shall be set forth in a manual which shall specify, in detail, how contacts are made and received at each episode criteria level.

(c) In the event that procedures meeting the requirements of paragraph (b) of this section have not been fully implemented by the prescribed date for submitting a plan, a description of procedures under consideration and a timetable for their implementation shall be submitted with the plan. Such timetable shall provide for full implementation of such procedures within 1 year after such prescribed date. A description of actions that will be taken to reduce emissions during episodes which ocur during such 1 year period shall be included.

§ 420.16 Control regulations.

The control strategy included in the plan shall be adopted in the form of control regulations and copies shall be submitted with the plan, together with timetables for implemenation and enforcement of such regulations. A plan containing proposed control regulations does not satisfy requirements for plan content nor will it be construed a timely submission.

§ 420.17 Air quality surveillance.

(a) (1) The plan shall provide for the establishment of an air quality surveillance system meeting, at a minimum, the following requirements:

Classification of region	Pollutant	Sampling method	Minimum number of air quality monitoring sites	Minimum frequency of sampling
I	Suspended particulates	NASN high-volume.	One per 50,000 population up to 10 sites.	One 24-hour sample every 6 days.
		Tape sampler	One per 250,000 population up to 8 sites.	Continuous.
	Sulfur dioxide	Modified pararosanaline or equivalent.[a]	One per 100,000 population up to 10 sites, and	One 24-hour sample every 6 days (gas bubbler).[f]
			One per 250,000 population up to 8 sites.	Continuous.
	Carbon monoxide	Nondispersive infrared or or equivalent[b]	One per 250,000 population up to 8 sites.[c]	Continuous.
	Nitrogen dioxide	24-hour sampling method (Jacobs-Hochheiser method) or equivalent.[d]	One per 100,000 population up to 10 sites, and One per 250,000 population up to 8 sites.	One 24-hour sample every 6 days (gas bubbler).[f]
				Continuous.
	Oxidants	Neutral potassium iodide colorimetric or equivalent.[e]	One per 250,000 population up to 8 sites.	Continuous.
II	Suspended particulates	NASN high-volume.	3	One 24-hour sample every 6 days.[f]
	Sulfur dioxide	Modified pararosanaline.	3	One 24-hour sample every 6 days (gas bubbler).[f]
III	Suspended particulates	NASN high-volume.	1	One 24-hour sample every 6 days.[f]
	Sulfur dioxide	Modified pararosanaline.	1	One 24-hour sample every 6 days (gas bubbler).[f]

[a] Equivalent continuous instruments are coulometric and flame photometric.
[b] Equivalent methods are gas chromatographic technique and mercury replacement.
[c] In regions where multiple carbon monoxide monitoring sites are required, one should have mobile capabilities.
[d] Equivalent methods are continuous Saltzman and coulometric.
[e] Equivalent methods are chemiluminescence and coulometric.
[f] Equivalent to 61 random samples per year.

(2) At least one sampling site must be located in the area of estimated maximum pollutant concentrations.

(b) The plan shall contain a description of the existing and proposed system, which shall set forth:

(1) The basis for the design of the surveillance system, selection of samplers, and sampling sites.

(2) The locations of the samplers by Universal Transverse Mercator (UTM) grid coordinates or the equivalent. Any National Air Sampling Network sampling site may be designated as a sampler location.

(3) The sampling schedules.

(4) The methods of sampling and analysis.

(5) The method of data handling and analysis procedures.

(6) The timetable for the installation of any additional equipment needed to complete the system.

(c) The plan shall provide that information regarding the establishment and operation of the network and the data resulting from its use will be available to the Administrator upon request.

(d) The plan shall provide for monitoring of air quality during emergency episodes. The stations selected for use during episodes must be capable of providing real-time validated air quality data.

§ 420.18 Review of new sources and modifications.

(a) Each plan shall include a description of the procedures that will be used to implement the authority described in § 420.11(a)(4), which procedure shall be adequate to enable the State agency to determine that construction and modification of stationary sources does not result in violations of applicable emission limitations or other regulations and does not interfere with attainment or maintenance of a national standard. Procedures such as those described in section 1.1 of Appendix B to this part will be deemed to fulfill this requirement.

(b) Such procedures shall provide for the submission, by the owner or operator of a new stationary source, or existing source which is to be modified, of such information on location, design, construction, and operation of such source as may be necessary to permit the State agency to make the determination referred to in paragraph (a) of this section.

(c) Such procedures shall also include means of disapproving such construction or modification if it will result in a violation of applicable emission limitations or other regulations or will interfere with attainment or maintenance of a national standard.

(d) Such procedure shall provide that approval of any construction or modification shall not affect the responsibility of the owner or operator to comply with applicable emission limitations or other regulations.

§ 420.19 Source registration.

Each plan shall contain a description of the procedures that will be used for registration of significant existing sources of pollutants for which there are national standards. Such procedure shall provide for the submission and periodic updating, by the owners or operators of such sources, of information on the nature and amount of emissions from such sources and such other information as may be necessary to enable the State agency to determine whether such sources are in compliance with applicable emission limitations or other regulations. Procedures derived from those described in section 1.1 of Appendix B to this part will be deemed to fulfill this requirement.

§ 420.20 Emissions surveillance.

Each plan shall include a description of the procedures that will be used to monitor compliance with emission limitations and other regulations applicable to emission sources. Such procedures shall include:

(a) Periodic inspection of stationary sources at intervals not exceeding 2 years.

(b) A field investigation system for:

(1) Detecting, and initiating any necessary action to abate, emissions from sources not otherwise known to the State agency.

(2) Investigating and taking any necessary action with respect to complaints.

(3) Enforcing regulations applicable to visible emissions.

(4) Conducting emission tests on point sources.

§ 420.21 Resources.

The plan shall include a description of the resources available to the State agency and local agencies at the date of submission of the plan and of any additional resources needed to carry out the plan during the 5-year period following its submission. Such description, which shall be provided in a form similar to that in Appendix K to this part, shall include projections of the extent to which resources will be acquired at 1-, 3-, and 5-year intervals.

§ 420.22 Intergovernmental cooperation.

(a) For the purpose of assisting the development of a plan for any interstate region, the State agency responsible for implementing national standards in any portion of such an interstate region shall furnish any available data on emissions, air quality, and control strategy development, upon request, to any other State or local agency having such responsibility in any other portion of such interstate region.

(b) Each plan shall identify, by official title, local air pollution control agencies involved in the development of the plan as well as those which will participate in the implementation of the plan.

(c) Each plan shall provide that the State agency having primary responsibility for implementing national standards in any region, or portion thereof, will promptly transmit, to other State agencies having such responsibility in the same or other States, information on factors (e.g., construction of new industrial plants) which may significantly affect air quality in any other portion of such region or in any adjoining region.

Subpart C—Extensions

§ 420.30 Request for 2-year extension.

(a) The Governor of a State may, at the time of submission of a plan to implement a primary standard in a Priority I region, request the Administrator to extend, for a period not exceeding 2 years, the 3-year period for attainment of the primary standard in such region.

(b) Any such request regarding an interstate region shall be submitted jointly with the requests of Governors of all States in the region, or shall show that the Governor of each State in the region has been notified of such request.

(c) Any such request regarding attainment of a primary standard shall be submitted together with a plan providing for attainment of such primary standard not later than 5 years after the date of the Administrator's approval of such plan and shall show that it is more reasonable to provide for attainment of such primary standard within such 5-year period than within a 3-year period. Any plan so submitted shall reflect consideration of the emission reductions which can be achieved through application of measures such as those described in Appendix B to this part and in § 420.14(c).

(d) Any showing pursuant to paragraph (c) of this section shall include:

(1) A clear identification of emission sources or classes of moving sources which will be unable to comply with the requirements of such plan within a 3-year period because the necessary technology or alternative methods of compliance will not be available soon enough to permit such compliance.

(2) A clear identification and justification of any assumptions made with respect to the time at which such needed technology or alternative methods of compliance will be available.

(3) A clear identification of the alternative means of attainment of such primary standard which were considered and an explanation of why such alternatives were rejected as not being reasonably available.

(4) A showing that emission sources or classes of moving sources other than those referred to in subparagraph (1) of this paragraph will be required to comply, within such 3-year period, with any applicable requirements of such plan.

(5) A clear identification of the interim control measures provided for in such plan with respect to emissions from such source(s).

§ 420.31 Request for 18-month extension.

(a) Upon request of the State agency made in accordance with this section, the Administrator may, whenever he determines necessary, extend for a period not to exceed 18 months the deadline for submitting that portion of a plan that implements a secondary standard.

(b) Requests for such extensions will be given consideration only in the case of Priority I and Priority II regions.

(c) Requests for extensions of the deadline shall show that attainment of the secondary standards will require emission reductions exceeding those which can be achieved through the application of emission limitations identical or equivalent to those described in Appendix B to this part.

(d) In addition to satisfying the other requirements of this subpart, a request for extension of the deadline with respect to any portion of an interstate region shall be submitted jointly with requests for such extensions from all other States within the region or shall show that all such States have been notified of such request.

(e) A request for extension of the deadline shall be submitted sufficiently early to permit development of a plan prior to the deadline in the event that such request is denied. Any such request shall contain the information necessary to permit the Administrator to determine whether such request satisfies the requirements of this section.

§ 430.32 Request for one-year postponement.

(a) Pursuant to section 110(f) of the Act, the Governor of a State may request, with respect to any stationary source of class of moving sources, a postponement for not more than 1 year of the applicability of any requirement prescribed in a State plan approved by the Administrator under this part.

(b) Any such request regarding sources located in an interstate region shall show that the Governor of each State in the region has been notified of such request.

(c) Any such request shall clearly identify the source(s) and requirement(s) which are the subject of such request.

(d) A public hearing will be held, before the Administrator or his designee, on any such request. No such hearing will be held earlier than 1 year in advance of the prescribed date for compliance with any such requirement(s).

(e) No such request shall operate to stay the applicability of the requirement(s) covered by such request.

(f) A State's determination to defer the applicability of any requirement of a plan with respect to such source(s) will not necessitate a request for postponement under this section unless such deferral will prevent attainment or maintenance of a national standard within the time prescribed by the Act or such additional time prescribed by the Administrator under § 420.30: *Provided, however,* That any such determination would constitute revision of an applicable State plan under § 420.07.

APPENDIX A—AIR QUALITY ESTIMATION

Ambient pollutant levels may be estimated through the application of atmospheric diffusion models. These estimates are based primarily upon the emission densities, meteorology, and topography that prevails within a region. Two types of diffusion models may be used: (1) A model developed by Holzworth,[1] and subsequently modified, which estimates annual average concentrations on the basis of emissions uniformly distributed throughout a region; and (2) a diffusion model which predicts concentration resulting from point sources during particularly unfavorable meteorological conditions.

Holzworth model. This model requires estimates of a region's average emission density, the "size" of the region, and the wind speed through the atmospheric mixing layer. Emission densities have been computed for all of the Standard Metropolitan Statistical Areas (SMSA) for both particulate matter and sulfur dioxide (SO_2) and can be readily estimated for other urbanized areas. Values of the wind speed in the mixing layer have been determined and published by Holzworth. The basic assumptions and technical modifications of Holzworth's procedures are found elsewhere;[2] however, a summary and description of how to use the procedure are presented here.

For discussion purposes let:

X = Estimated concentration, micrograms/cubic meter ($\mu g/m^3$)

μ = Wind speed through mixing layer, meters/second (m/s)

Q = Emission density, micrograms/square meter-second ($\mu g/m^2$-s)

C = Urban size = $\frac{1}{2}\sqrt{\text{urban area}}$, kilometers (km.)

Figure 1 is a plot or "normalized concentration" $\left(\frac{X\mu}{Q}\right)$ as a function of urban size and is defined to be the product of predicted concentration and wind speed divided by emission density. Concentrations are an increasing function of urban size and are directly proportional to emission density. The wind serves as a diluting agent and reduces expected pollutant concentrations.

As an example, the SMSA of Chicago is used to compute the expected concentration of SO_2 from 1967 emissions in the Chicago area. The urban area of Chicago for computational purposes is 2,500 square km. The urban size, as defined, is consequently 25 km. and thus from Figure 1:

$$\frac{X\mu}{Q} = 230$$

For Chicago:

$$Q = 17.8 \frac{\mu g/sec}{meter^2}$$

$$\mu = 7.3 \text{ meters/sec}$$

and hence;

$$X = \frac{(230)\ (17.8)}{7.3} = 561\ \mu g/m^3$$

Using this procedure, concentration estimates for both SO_2 and particulate matter can be made on a regional basis. These predicted air quality concentrations may be used to establish region classifications.

Point source model. A short-term diffusion model[3,4] will be used to estimate the maximum ambient concentrations due to point source emissions. The model is composed of two portions and describe the maximum concentrations which may occur under two separate types of meteorological conditions.

The first portion is stack height dependent and describes concentrations that may occur using a generalized atmospheric diffusion model.[4] The second portion of the model is one in which ambient concentrations are estimated on the basis of emissions from "tall stacks" during periods of low wind speeds and severe limitations on vertical mixing.

A joint consideration of these two models indicates that expected maximum concentrations are constant for physical stack heights which exceed 60 meters. A plot of 24-hour maximum concentration expected for various stack heights and emissions is given in Figure 2.

For example, at stack heights of 60 meters, SO_2 emission rates from a point source must exceed 100 metric tons/day for the primary standard for sulfur oxides to be exceeded. Mass emission rates are available for all significant sources of sulfur oxides and particulate matter in the country and will be used to aid in the regional classification for each pollutant.

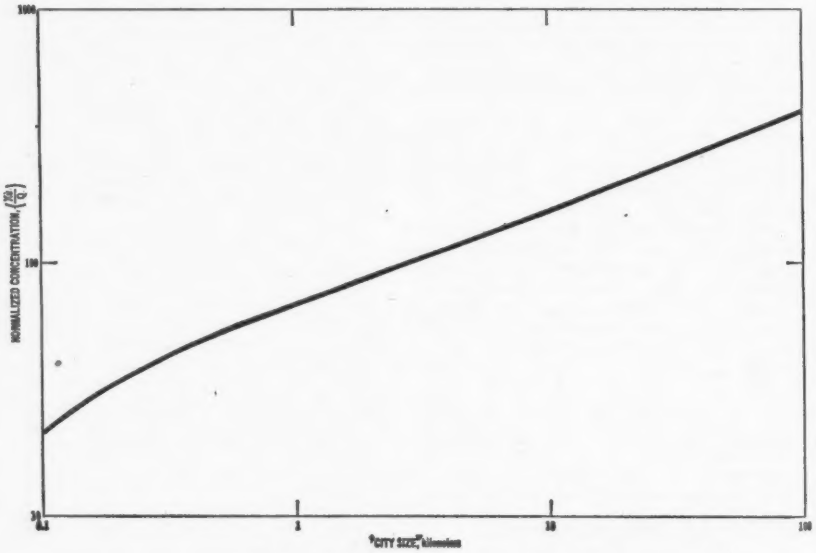

Figure 1. Relationship of normalized pollutant concentration and city size.

[1] Holzworth, George C., "Meteorological Potential for Urban Pollution in the Contiguous United States", Paper No. ME-206 presented at the Second International Clean Air Congress, Washington, D.C., December 1970.

[2] Fensterstock, et al., "The Development and Utilization of an Air Quality Index", APCA paper 69-73 presented at annual meeting of APCA, New York, N.Y., June 1969.

[3] Carpenter, S. B., et al., "Principal Plume Dispersion Models—TVA Power Plants", APCA Paper No. 70-149 presented at annual meeting of APCA, St. Louis, Mo., June 1970.

[4] Gifford, Frank A., "The Problem of Forecasting Dispersion in the Lower Atmosphere", USAEC, Division of Technical Information Extension, Oak Ridge, Tenn., July 1961.

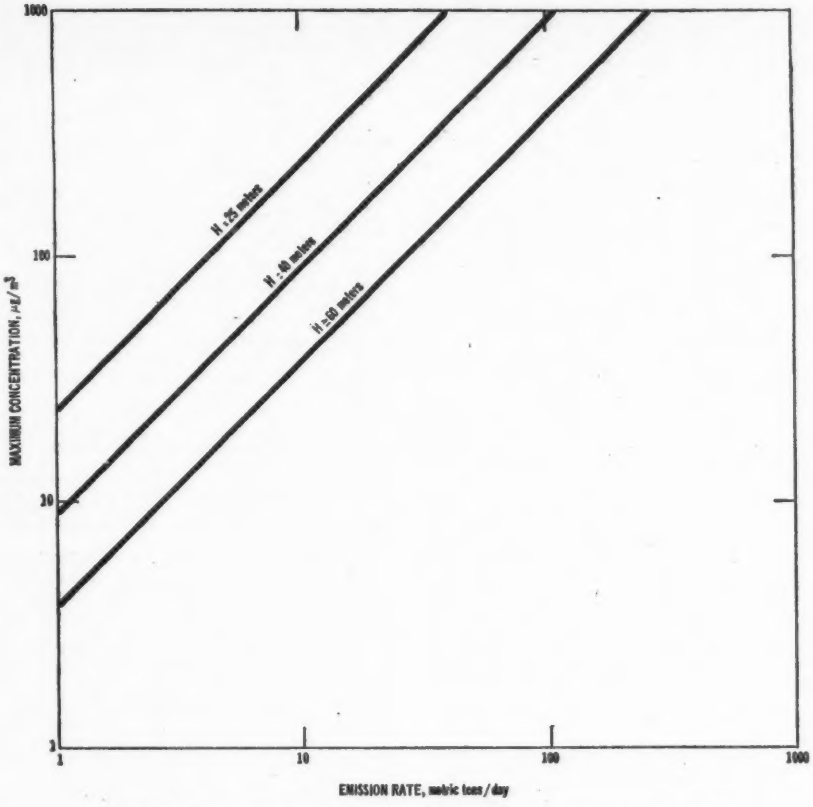

Figure 2. Relationship of emission rate, stack height, and estimated ground-level concentration.

Appendix B—Air Pollution Control Regulations

These air pollution control regulations include examples of the administrative provisions and pollutant emission limitations a State may need for an approvable implementation plan. Part I contains general provisions regarding permits for new construction; emission monitoring, recordkeeping, and reporting; prevention of air pollution emergencies; and timetables for compliance. Parts II through VII contain emission limitations applicable to sources of particulate matter, sulfur oxides, hydrocarbons, carbon monoxide, and nitrogen oxides.

Although these emission limitations contained herein are relatively stringent, they have, with some modification, been applied by various State and local jurisdictions. Notes have been added, where necessary, to explain the basis or application of the regulations. These emission limitations do not necessarily represent the ultimate in emission control.

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I—GENERAL PROVISIONS

1.0 Definitions.

1.0.1 "Air contaminant" shall mean dust, fumes, mist, smoke, other particulate matter, vapor, gas, or any combination thereof.

1.0.2 "Air pollution" shall mean the presence in the outdoor atmosphere of one or more air contaminants in such quantities and duration as is or tends to be injurious to human health or welfare, animal or plant life, or property or interferes with the enjoyment of life or property.

1.0.3 "Director" shall mean the Director of the State Air Pollution Control Agency.

1.0.4 "Existing source" shall mean equipment, machines, devices, articles, contrivances, or installations which are in being on the effective date of these regulations; except that any existing equipment, machine, device, article, contrivance, or installation which is altered, replaced, or rebuilt after the effective date of these regulations shall be reclassified as "new source".

1.0.5 "Fuel-burning equipment" shall mean any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.

1.0.6 "Fugitive dust" shall mean solid air-borne particulate matter emitted from any source other than a flue or stack.

1.0.7 "Multiple-chamber incinerator" shall mean any article, machine, equipment, contrivance, structure or part of a structure, used to dispose of combustible refuse by burning, consisting of three or more refractory lined combustion furnaces in series, physically separated by refractory walls, interconnected by gas passage ports or ducts and employing adequate design parameters necessary for maximum combustion of the material to be burned.

1.0.8 "New source" shall mean equipment, machines, devices, articles, contrivances, or installations built or installed on or after the effective date of these regulations, and installations existing at said stated time which are later altered, repaired, or rebuilt. Any equipment moved to another premise involving a change of address, or purchased and to be operated by a new owner, or when a new lessee desires to operate such equipment after the effective date of these regulations shall be considered a new source.

1.0.9 "Opacity" shall mean a state which renders material partially or wholly impervious to rays of light and causes obstruction of an observer's view.

1.0.10 "Open burning" shall mean the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the ambient air without passing through an adequate stack, duct, or chimney.

1.0.11 "Particulate matter" shall mean any material, except where water in uncombined form, that is or has been airborne and exists as a liquid or a solid at standard conditions.

1.0.12 "Person" shall mean any indivdual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other State or political subdivision or agency thereof or any legal successor, representative, agent, or agency of the foregoing.

1.0.13 "Ringelmann chart" shall mean the chart, published and described in the U.S. Bureau of Mines Information Circular 8333.

1.0.14 "Soiling index." A measure of the soiling properties of suspended particles in air determined by drawing a measured volume of air through a known area of Whatman No. 4 filter paper for a measured period of time, expressed as COH's/1,000 linear feet.

1.0.15 "Source" shall mean any property, real or personal, or person contributing to air pollution.

1.0.16 "Stack or chimney" shall mean any flue, conduit, or duct arranged to conduct emissions.

1.0.17 "Standard conditions" shall mean a dry gas temperature of 70° Fahrenheit and a gas pressure of 14.7 pounds per square inch absolute.

1.0.18 "Submerged fill pipe" any fill pipe the discharge opening of which is entirely submerged when the liquid level is 6 inches

above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean any fill pipe the discharge opening of which is entirely submerged when the liquid level is two times the fill pipe diameter, in inches, above the bottom of the tank.

1.0.19 "Effluent water separator" any tank, box, sump, or other container in which any volatile organic compound floating on or entrained or contained in water entering such tank, box, sump, or other container is physically separated and removed from such water prior to outfall, drainage, or recovery of such water.

1.0.20 "Volatile organic compounds" any compound containing carbon and hydrogen or containing carbon and hydrogen in combination with any other element which has a vapor pressure of 1.5 pounds per square inch absolute or greater under actual storage conditions.

1.1 Permits.

1.1.1 General requirements:

(a) No person shall cause or permit the construction or modification of any new source without first obtaining an authority to construct or modify from the Director as to the location and design of such new source to comply with applicable rules and regulations and ambient air quality standards.

(b) The Director shall not approve such construction or modification unless the applicant demonstrates to the satisfaction of the Director that the new source can be expected to comply with the applicable rules and regulations.

1.1.2 Applications:

(a) Application for authority to construct or modify shall be made by the owner or operator of the new source on forms furnished by the Director. If the applicant is a partnership or group other than a corporation, the application shall be made by one individual who is a member of the group. If the applicant is a corporation, the application shall be made by an officer of the corporation.

(b) A separate application is required for each new source subject to rules and regulations. To aid in evaluating the new source, additional applications may be required by the Director.

(c) Each application shall be signed by the applicant. The signature of the applicant shall constitute an agreement that the applicant will assume responsibility for the construction, modification, or use of the new source concerned in accordance with the rules and regulations.

1.1.3 Information required:

(a) Each application for an authority to construct or modify shall be accompanied by two copies of complete data, siting information, plans descriptions, specifications and drawings to show how the proposed new source is designed and in what manner it will be operated and controlled.

(b) Any additional information, plans, specifications, evidence or documentation that the Director may require.

1.1.4 Standards for granting authority to construct or modify. No authority to construct or modify shall be granted unless the applicant shows to the satisfaction of the Director that:

(a) The new source is designed and will be constructed or modified to operate without causing a violation of the applicable rules and regulations.

(b) The new source is designed, built and equipped in accordance with the latest available control technology so as to reduce emissions to a minimum.

(c) The new source, as designed or modified, does not endanger maintenance or attainment of any applicable ambient air quality standard.

(d) The new source, if required by the Director, shall be provided with:

(1) Sampling ports of a size, number and location as the Director may require,

(2) Safe access to each port,

(3) Instrumentation to monitor and record emission data and

(4) Any other sampling and testing facilities the Director may require.

1.1.5 Action on applications:

(a) The Director shall act, within a reasonable time, on an application for an authority to construct or modify, and shall notify the applicant in writing of his approval, conditional approval, or denial of the application.

(b) If an application is denied, the Director shall set forth his objections in the notice of denial.

(c) The applicant may submit answers and comments, in duplicate, to the Director's objections to the application.

(d) The Director will consider the applicant's answers and comments to his objections, and shall notify the applicant in writing of his approval or denial of the application.

(e) The Director shall not accept a further application unless the applicant has complied with the objections specified by the Director as his reasons for denial of the authority to construct or modify.

1.1.6 Conditional authority to construct or modify. The Director may grant a conditional authority to construct or modify if it appears likely from all of the information submitted that as a result of the conditions the new source will satisfy the requirements of 1.1.4 above.

1.1.7 Cancellation of authority to construct or modify:

(a) The Director may cancel an authority to construct or modify if the construction or modification is not begun within 1 year from the date of issuance, or if the work involved in the construction or modification is suspended for 1 year or more from the date of issuance.

(b) An applicant may secure an extension of the expiration date by written request to the Director stating the reasons for the request. Extensions may be granted for a period of not more than 6 months.

1.1.8 Permit to operate:

(a) No person shall begin operation of a new source without notifying the Director at least 30 days prior to operation.

(b) No person shall cause or permit the operation of a new source for more than a sixty (60) day period without applying for a permit to operate from the Director.

(c) No person shall cause or permit the use or operation of existing sources of control apparatus without applying for a permit to operate from the Director within 6 months of the adopted date of these regulations or an approved control plan in accordance with section 1.7 of these regulations.

(d) No owner or operator shall cause or permit the operation of a new or existing source if the Director denies or revokes a permit to operate.

1.1.9 Applications. Applications for a permit to operate shall be made in accordance with 1.1.2 of this part.

1.1.10 Standards for granting permits. No permit to operate shall be granted unless the applicant shows to the satisfaction of the Director that the new source satisfied the requirements of the applicable rules and regulations and has been constructed, installed, or modified in accordance with the requirements and conditions contained in the authority to construct or modify.

1.1.11 Performance testing. Before a permit to operate is granted, the applicant, if required by the Director, shall conduct performance tests, in accordance with methods approved by the Director with the tests being made at the expense of the applicant. The Director may monitor performance tests conducted by the applicant and may also conduct performance tests.

1.1.12 Action on applications:

(a) Before acting on an application for a permit to operate the Director may require the applicant to furnish additional information, plans or specifications.

(b) The Director shall act within a 60-day period on an application for a permit to operate and shall notify the applicant, in writing of his approval, conditional approval or denial of the application.

(c) If an application is denied the procedures of 1.1.5 of this part shall apply.

1.1.13 Conditional permit. The holder of a permit to operate shall comply with the conditions contained in his permit as well as all applicable provisions of rules and regulations.

1.1.14 Suspension or revocation of permit:

(a) The Director may suspend or revoke a permit to operate for willful or continued violation of rules and regulations.

(b) Suspension or revocation of a permit to operate shall become final 10 days after service of notice on the holder of the certificate.

(c) A permit to operate which has been revoked pursuant to these regulations shall be surrendered forthwith to the Director.

1.1.15 Transfer of permit. Any purported or attempted transfer of a permit to operate to another owner or from one location to another or from one new source to another automatically revokes the permit.

1.1.16 Reporting information. No owner or operator shall cause or permit the operation of any new source without furnishing such performance tests results, information, and records as may be required by the Director in the applicable rules and regulations.

1.1.17 Exemptions. An authority to construct and a permit to operate shall not be required for:

(a) The installation or alternation of an air contaminant detector, air contaminant recorder, combustion controller or combustion shutoff.

(b) Air conditioning or ventilating systems not designed to remove air contaminant generated by or released from equipment.

(c) Fuel burning equipment, other than smoke house generators, which; uses gas as a fuel for space heating, air conditioning or heating water; or is used in a private dwelling or has a B.t.u. input of not more than 350,000 B.t.u. per hour; or is used for space heating, other than boilers and hot air furnaces.

(d) Internal combustion engines.

(e) Laboratory equipment used exclusively for chemical or physical analyses.

(f) Other sources of minor significance specified by Director.

NOTE: This suggested regulation specifies a complete permit system for application to new and existing sources. For existing sources, a simple registration is adequate although not as effective for enforcement purposes.

1.2 Monitoring, Records, Reporting.

1.2.1 The Director may require the owner or operator of any air contaminant source to install, use, and maintain such monitoring equipment; sample such emissions in accordance with methods as the Director shall prescribe; establish and maintain such records; and make such periodic emission reports as required in section 1.2.2.

1.2.2 Records and reports as the Director shall prescribe on air contaminants or fuel shall be recorded, compiled, and submitted on forms furnished by the Director. (The procedures below are examples of such requirements.)

(a) Emissions of particulate matter, sulfur dioxide, and oxides of nitrogen shall be expressed as follows: in pounds per hour and pounds per million B.t.u. of heat input for fuel-burning equipment; in pounds per hour and pounds per 100 pounds of refuse burned for incinerators; and in pounds per hour and in pounds per hourly process weight or production rate or in terms of some other easily measured and meaningful process unit specified by the Director.

(b) Sulfur dioxide and oxides of nitrogen emission data shall be averaged over a 24-hour period and shall be summarized monthly. Daily averaged and monthly summaries shall be submitted to the Director biannually. Data should be calculated daily and available for inspection at any time.

(c) Particulate matter emissions shall be sampled and submitted biannually.

(d) Visible emissions shall be measured continuously and records kept indicating total minutes per day in which stack discharge effluent exceeds 20 percent opacity. Data should be summarized monthly and submitted monthly and submitted biannually. Current daily results shall be available for inspection at any time.

(e) The sulfur content of fuels, as burned, except natural gas, shall be determined in accordance with current recognized ASTM procedures. Daily and monthly averages shall be submitted biannually. Daily records shall be kept current and be available for inspection.

1.2.3 The following sources are subject to the provisions of this regulation: (The appropriate State Agency should either classify such sources by regulation or require reporting as a permit to operate condition.)

1.3 Sampling and Testing Methods.

1.3.1 All tests shall be made and the results calculated in accordance with test procedures approved by the Director. All tests shall be made under the direction of persons qualified by training and/or experience in the field of air pollution control.

1.3.2 The Director may conduct tests of emissions of air contaminants from any source. Upon request of the Department the person responsible for the source to be tested shall provide necessary holes in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices as may be necessary for proper determination of the emission of air contaminants.

1.4 Malfunction of Equipment; Reporting.

1.4.1 In the case of shutdown of air pollution control equipment for necessary scheduled maintenance, the intent to shut down such equipment shall be reported to the Director at least twenty-four (24) hours prior to the planned shutdown. Such prior notice shall include, but is not limited to the following:

(a) Identification of the specific facility to be taken out of service as well as its location and permit number.

(b) The expected length of time that the air pollution control equipment will be out of service.

(c) The nature and quantity of emissions of air contaminants likely to occur during the shutdown period.

(d) Measures such as the use of off-shift labor and equipment that will be taken to minimize the length of the shutdown period.

(e) The reasons that it would be impossible or impractical to shut down the source operation during the maintenance period.

1.4.2 In the event that any emission source, air pollution control equipment, or related facility breaks down in such a manner as to cause the emission of air contaminants in violation of this article, the person responsible for such equipment shall immediately notify the Director of such failure or breakdown and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Director shall be notified when the condition causing the failure or breakdown has been corrected and the equipment is again in operation.

1.5 Air pollution emergencies. Notwithstanding any other provision of the air pollution control regulations, this episode regulation is designed to prevent the excessive buildup of air contaminants during air pollution episodes, thereby preventing the occurrence of an emergency due to the effects of these contaminants on the public health.

1.5.1 Episode criteria. Conditions justifying the proclamation of an air pollution alert, air pollution warning, or air pollution emergency shall be deemed to exist whenever the Director determines that the accumulation of air contaminants in any place is attaining or has attained levels which could, if such levels are sustained or exceeded, lead to a threat to the health of the public. In making this determination, the Director will be guided by the following criteria:

(a) "Air Pollution Forecast": An internal watch by the Department of Air Pollution Control shall be actuated by a National Weather Service advisory that Atmospheric Stagnation Advisory is in effect or the equivalent local forecast of stagnant atmospheric conditions.

(b) "Alert": The Alert level is that concentration of pollutants at which first stage control actions is to begin. An Alert will be declared when any one of the following levels is reached:

SO_2—0.3 p.p.m. 24-hour average.
Particulate—3.0 COHs, 24-hour average.
SO_2 and particulate combined—product of SO_2 p.p.m., 24-hour average and COHs equal to 0.2.
CO—15 p.p.m., 8-hour average.
Ox—0.1 p.p.m. 1-hour average.
NO_2—0.6 p.p.m., 1-hour average, 0.15 p.p.m., 24-hour average.

and meteorological conditions are such that this condition can be expected to continue for twelve (12) or more hours.

(c) "Warning": The warning level indicates that air quality is continuing to degrade and that additional abatement actions are necessary. A warning will be declared when any one of the following levels is reached:

SO_2—0.6 p.p.m., 24-hour average.
Particulate—6.0 COHs, 24-hour average.
Combined SO_2 and COHs, 24-hour average, SO_2 and COHs equal to 1.0.
CO—30 p.p.m., 8-hour average.
Ox—0.4 p.p.m., 1-hour average.
NO_2—1.2 p.p.m., 1-hour average, 0.3 p.p.m., 24-hour average.

and meteorological conditions are such that this condition can be expected to continue for twelve (12) or more hours.

(d) "Emergency": The emergency level is reached when the warning level for a pollutant has been exceeded and (1) the concentrations of the pollutant are continuing to increase, or (2) the Director determines that, because of meteorological or other factors, the concentrations will continue to increase.

(e) "Termination": Once declared, any status reached by application of these criteria will remain in effect until the criteria for that level are no longer met. At such time the next lower status will be assumed.

1.5.2 Emission Reduction Plans:

(a) Air Pollution Alert—Any persons responsible for the operation of a source of air contamination as set forth in Table I shall take all Air Pollution Alert actions as required for such source of air contamination and shall particularly put into effect the preplanned strategy for an Air Pollution Alert.

(b) Air Pollution Warning—Any person responsible for the operation of a source of air contamination as set forth in Table II shall take all Air Pollution Warning actions as required for such source of air contamination and shall particularly put into effect the preplanned strategy for an Air Pollution Warning.

(c) Air Pollution Emergency—Any person responsible for the operation of a source of air contamination as described in Table III shall take all Air Pollution Emergency actions as required for such source of air contamination and shall particularly put into effect the preplanned strategy for an Air Pollution Emergency.

1.5.3 Preplanned Abatement Strategies:

(a) Any person responsible for the operation of a source of air contamination as set forth in Table I shall prepare preplanned strategies, consistent with good industrial practice and safe operation procedures, for reducing the emission of air contaminants into the outdoor atmosphere during periods of an Air Pollution Alert, Air Pollution warning, and Air Pollution Emergency. Standby plans shall be designed to reduce or eliminate emissions of air contaminants into the outdoor atmosphere in accordance with the objectives set forth in Tables I–III which are made a part of this section.

(b) Any person responsible for the operation of a source of air contamination not set forth under section 4.1 shall, when requested by the Director in writing, prepare preplanned strategies consistent with good industrial practice and safe operating procedures, for reducing the emission of air contaminants into the outdoor atmosphere during periods of an Air Pollution Alert, Air Polluiton Warning, and Air Pollution Emergency. Standby plans shall be designed to reduce or eliminate emissions of air contaminants into the outdoor atmosphere in accordance with the objectives set forth in Tables I–III.

(c) Preplanned strategies as required under sections 4.1 and 4.2 shall be in writing and show the source of air contamination, the approximate amount of reduction of contaminants and a brief description of the manner in which the reduction will be achieved during an Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency.

(d) During a condition of Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency, preplanned strategies as required by this section shall be made available on the premises to any person authorized to enforce the provisions of the Air Pollution Control Regulations.

(e) Preplanned strategies as required by this section shall be submitted to the Director upon request within thirty (30) days of the receipt of such request; such preplanned strategies shall be subject to review and approval by the Director. If, in the opinion of the Director, such standby plans do not effectively carry out the objectives as set forth in Tables I–III, the Director may disapprove said preplanned strategies, state its reason for disapproval and order the preparation of amended strategies within the time period specified in the order. Any person aggrievied by the order requiring the preparation of a revised strategy is entitled to a hearing. If the person responsible fails within the time period specified in the order to submit an amended preplanned strategy which in the opinion of the Director meets the said objectives, the Director may revise the standby plan to cause it to meet these objectives. Such revised strategies will thereafter be the preplanned strategy which the person responsible will put into effect upon the issuance of an appropriate order by the Director.

Table I—Abatement Strategies Emission Reduction Plans

Alert Level

PART A—GENERAL

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.

2. The use of incinerators for the disposal of any form of solid waste shall be limited to the hours between 12 m. and 4 p.m.

3. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12 m. and 4 p.m.

4. Persons operating motor vehicles should eliminate all unnecessary operations.

PART B—SOURCE CURTAILMENT

Any person responsible for the operation of a source of atmospheric contamination listed below shall take all required control actions for this Alert Level.

Source of air contamination	*Air pollution alert*
1. Coal or oil-fired electric power generating facilities.	a. Substantial reduction by utilization of fuels having low ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Substantial reduction by diverting electric power generation to facilities outside of Alert Area.
2. Coal and oil-fired process steam generating facilities.	a. Substantial reduction by utilization of fuels having low ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Substantial reduction of steam load demands consistent with continuing plant operations.
3. Manufacturing industries of the following classifications: Primary Metals Industry. Petroleum Refining Operations. Chemical Industries. Mineral Processing Industries. Paper and Allied Products. Grain Industry.	a. Substantial reduction of air contaminants from manufacturing operations by curtailing, postponing, or deferring production and all operations. b. Maximum reduction by deferring trade waste disposal operations which emit solid particles, gas vapors or malodorous substance. c. Maximum reduction of heat load demands for processing. d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

Table II—Emission Reduction Plans

Warning Level

PART A—GENERAL

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.

2. The use of incinerators for the disposal of any form of solid waste or liquid waste shall be prohibited.

3. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12 m. and 4 p.m.

4. Persons operating motor vehicles must reduce operations by the use of car pools and increased use of public transportation and the elimination of unnecessary operation.

PART B—SOURCE CURTAILMENT

Any person responsible for the operation of a source of atmospheric contamination listed below shall take all required control actions for this Warning Level.

Source of air contamination	*Air pollution alert*
1. Coal or oil-fired electric power generating facilities.	a. Maximum reduction by utilization of fuels having lowest ash and sulfur content. b. Maximum utilization of mid-day (12:00 noon to 4:00 p.m.) atmospheric turbulence for boiler landing and soot blowing. c. Maximum reduction by diverting electric power generation to facilities outside of Warning Area.
2. Oil and oil-fired process steam generating facilities.	a. Maximum reduction by utilization of fuels having the lowest available ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Making ready for use a plan of action to be taken if an emergency develops.
3. Manufacturing industries which require considerable lead time for shut-down including the following classifications. Petroleum Refining. Chemical Industries. Primary Metals Industries. Glass Industries. Paper and Allied Products.	a. Maximum reduction of air contaminants from manufacturing operations by, if necessary, assuming reasonable economic hardships by postponing production and allied operation. b. Maximum reduction by deferring trade waste disposal operations which emit solid particles, gases, vapors or malodorous substances. c. Maximum reduction of heat load demands for processing. d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.
4. Manufacturing industries require relatively short lead times for shut-down including the following classifications. Primary Metals Industries. Chemical Industries. Mineral Processing Industries. Grain Industry.	a. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing, or deferring production and allied operations to the extent possible without causing injury to persons or damage to equipment. b. Elimination of air contaminants from trade waste disposal processes which emit solid particles, gases, vapors, or malodorous substances. c. Maximum reduction of heat load demands for processing. d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

Table III—Emission Reduction Plans

Emergency Level

PART A—GENERAL

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.

2. The use of incinerators for the disposal of any form of solid or liquid waste shall be prohibited.

3. All places of employment described below shall immediately cease operations.

a. Mining and quarrying of nonmetallic minerals.

b. All construction work except that which must proceed to avoid emergent physical harm.

c. All manufacturing establishments except those required to have in force an air pollution emergency plan.

d. Wholesale trade establishments; i.e., places of business primarily engaged in selling merchandise to retailers, to industrial, commercial, institutional or professional users, or to other wholesalers, or acting as agents in buying merchandise for or selling merchandise to such persons or companies.

e. All offices of local, county, and State government including authorities, joint meetings, and other public bodies excepting such agencies which are determined by the chief administrative officer of local, county, or State government, authorities, joint meetings and other public bodies to be vital for public safety and welfare and the enforcement of the provisions of this order.

f. All retail trade establishments except pharmacies and stores primarily engaged in the sale of food.

g. Banks, credit agencies other than banks, securities and commodities brokers, dealers, exchanges and services; offices of insurance carriers, agents and brokers, real estate offices.

h. Wholesale and retail laundries, laundry services and cleaning and dyeing establishments; photographic studios; beauty shops, barbershops, shoe repair shops.

i. Advertising offices; consumer credit reporting, adjustment and collection agencies; duplicating, addressing, blueprinting; photocopying, mailing, mailing list and stenographic services; equipment rental services, commercial testing laboratories.

j. Automobile repair, automobile services, garages.

k. Establishments rendering amusement and recreation services including motion picture theaters.

l. Elementary and secondary schools, colleges, universities, professional schools, junior colleges, vocational schools, and public and private libraries.

4. All commercial and manufacturing establishments not included in this order will institute such actions as will result in maximum reduction of air contaminants from their operations by ceasing, curtailing, or postponing operations which emit air contaminants, to the extent possible without causing injury to persons or damage to equipment.

5. The use of motor vehicles is prohibited except in emergencies with the approval of local or State police.

PART B—SOURCE CURTAILMENT

Any person responsible for the operation of a source of atmospheric contamination listed below shall take all required control actions for this Emergency Level.

Source of air contamination	*Air pollution emergency*
1. Coal or oil-fired electric power generating facilities.	a. Maximum reduction by utilization of fuels having lowest ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing. c. Maximum reduction by diverting electric power generation to facilities outside of Emergency Area.
2. Coal and oil-fired process steam generating facilities.	a. Maximum reduction by reducing heat and steam demands to absolute necessities consistent with preventing equipment damage. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Taking the action called for in the emergency plan.
3. Manufacturing industries of the following classifications. Primary Metals Industries. Petroleum Refining. Chemical Industries. Mineral Processing Industries. Grain Industry. Paper and Allied Products.	a. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing or deferring production and allied operations to the extent possible without causing injury to persons or damage to equipment. b. Elimination of air contaminants from trade waste disposal processes which emit solid particles, gases, vapors, or malodorous substances. c. Maximum reduction of heat load demands for processing. d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

1.6 Prohibition of air pollution. No person shall permit or cause air pollution, as defined in section 1.02 of this article.

1.7 Compliance schedule. Except as otherwise specified, compliance with the provisions of these regulations shall be according to the following time schedule.

1.7.1 New source. All new sources shall comply as of going into operation.

1.7.2 Existing sources. All existing sources not in compliance as of the effective date of these regulations shall be in compliance within 6 months of the effective date of these regulations unless the owner or person responsible for the operation of the installation shall have submitted to the Director in a form and manner satisfactory to him, a control plan and schedule for achieving compliance, such plan and schedule to contain a date on or before which full compliance will be attained, and such other information as the Director may require. If approved by the Director, such date will be the date on which the person shall comply. The Director may require persons submitting such a plan to submit subsequent periodic reports on progress in achieving compliance. In no event shall the control plan and schedule exceed 3 years from the adopted date of these regulations.

1.8 Circumvention. No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate these regulations.

1.9 Severability. If any provision of these regulations or the application thereof to any person or circumstances is held to be invalid, such invalidity shall not affect other provisions or application of any other part of these regulations which can be given effect within six months of the effective date of without the invalid provisions or application, and to this end the provisions of these regulations and the various applications thereof are declared to be serverable.

II—CONTROL OF OPEN BURNING AND INCINERATION

2.1 Open Burning. No person shall ignite, cause to be ignited, permit to be ignited, or maintain any open fire except as follows:

2.1.1 Open fires for the cooking of food for human consumption on other than commericial premises.

2.1.2 Fires for recreational or ceremonial purposes.

2.1.3 Fires to abate a fire hazard, providing hazard is so declared by the fire department or fire district having jurisdiction.

2.1.4 Fires for prevention or control of disease or pests.

2.1.5 Fires for training personnel in the methods of fighting fires.

2.1.6 Fires for the disposal of dangerous materials, where there is no alternate method of disposal and burning is approved by the Director.

2.2 Incinerator Design and Operation.

2.2.1 No residential or commercial single-chamber incinerator shall be used for the burning of refuse for a period in excess of eighteen (18) months after the adopted date of this regulations.

2.2.2 All new incinerators and all existing incinerators within 18 month after adopted date of this regulation shall be multiple-chamber incinerators, provided that the Director may approve any other type of incinerator if it is demonstrated such design provides equivalent performance.

2.2.3 No person shall operate or cause or permit the operation of any incinerator at any time other than between the hours of 10 a.m. and 4 p.m. This restriction shall not apply to incierators having a refuse-burning capacity of five (5) tons per hour or more.

2.2.4 Incinerators shall be designed and operated in such manner as is necessary to prevent the emission of objectionable odors.

NOTE: Additional regulations prohibiting all domestic and commercial incineration may be feasible in some areas and necessary for attainment of national air quality standards.

III—CONTROL OF PARTICULATE EMISSIONS

3.1. Visible Emissions.

3.1.1 Visible emissions restrictions for stationary sources.

(a) No person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or 20 percent opacity.

(b) A person may discharge into the atmosphere from any single source of emission for a period or periods aggregating not more than 3 minutes in any 60 minutes air contaminants of a shade of density not darker than No. 3 on the Ringelmann chart or 60 percent capacity.

3.1.2 Visible emission from motor vehicle.

(a) No person shall cause or permit the emission of visible air contaminants from gasoline-powered motor vehicles for longer than 5 consecutive seconds.

(b) No person shall cause or permit the emission of visible air contaminants from diesel-powered motor vehicles of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or 20 percent opacity for longer than 5 consecutive seconds.

3.1.3 Uncombined water. Where the presence of uncombined water is the only

reason for failure of an emission to meet the requirements of this regulation, such sections shall not apply.

3.2 Fugitive Dust.

3.2.1 No person shall cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to, the following:

(a) Use, where possible, water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;

(b) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts;

(c) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations;

(d) Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne;

(e) Conduct of agricultural practices such as tilling of land, application of fertilizers, etc. in such manner as to not create a nuisance to others residing in the area.

(f) The paving of roadways and their maintenance in a clean condition.

(g) The prompt removal of earth or other material from paved street which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water.

3.2.2 No person shall cause or permit the discharge of visible emissions beyond the lot line of the property on which the emissions originate.

3.2.3 When dust, fumes, gases, mist odorous matter, vapors, or any combination thereof escape from a building or equipment in such a manner and amount as to cause a nuisance or to violate any regulation, the Director may order that the building or equipment in which processing, handling and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.

3.3 Incineration.

3.3.1 No person shall cause or permit to be emitted into the open air from any incinerator, particulate matter in the exhaust gases to exceed 0.10 pounds per 100 pounds of refuse burned.

3.3.2 Emission tests shall be conducted at maximum burning capacity of the incinerator.

3.3.3 The burning capacity of an incinerator shall be the manufacturer's or designer's guaranteed maximum rate or such other rate as may be determined by the Director in accordance with good engineering practices. In case of conflict, the determination made by the Director shall govern.

3.3.4 For the purposes of this regulation, the total of the capacities of all furnaces within one system shall be considered as the incinerator capacity.

NOTE: This mass emission rate is about equivalent to a grain loading of 0.1 grains/SCF at 12 percent carbon dioxide. More restrictive requirements are feasible for large incinerators.

3.4 Fuel Burning Equipment.

3.4.1 No person shall cause or permit emission to the atmosphere from fuel burning equipment burning solid fuel of particulate matter in excess of 0.10 pounds per million B.t.u. per hour.

3.4.2 No person shall cause or permit emission to the atmosphere, from oil-fired fuel burning equipment rated greater than or equal to 250 million B.t.u. per hour heat input, of particulate matter in excess of 0.025 pounds per million B.t.u. per hour.

3.4.3 For purposes of this regulation the heat input shall be the aggregate heat content of all fuels whose products of combustion pass through a stack or stacks. The heat input value used shall be the equipment manufacturer's or designer's guaranteed maximum input, whichever is greater. The total heat input of all fuel burning units on a plant or premises shall be used for determining the maximum allowable amount of particulate matter which may be emitted.

NOTE: Section 3.4.1 requires solid fuel burning equipment to remove about 99 percent of particulate matter generated by combustion of the average 10 percent ash coal. Section 3.4.2 requires removal of about 80 percent of particulate generated from combustion of high-ash residual fuel oil in large boilers. This can be accomplished by proper design and operation and use of small diameter cyclones and/or electrostatic precipitators or low-ash oil. Additional regulations prohibiting the combustion of solid fuels and/or residual fuel oil in small units may be feasible in some areas and necessary to achieve national air quality standards for example, prohibition of hand-fired coal burning units is practiced in several areas.

3.5 Process Industries—General.

3.5.1. No person shall cause, suffer, allow, or permit the emission of particulate matter in any one hour from any source in excess of the amount shown in Table IV for the process weight rate allocated to such source or in excess of 0.03 grains per standard cubic foot of exhaust gas.

TABLE IV

Process weight rate (lb./hr.)	*Rate of emission (lb./hr.)*
100	0.551
200	0.877
400	1.40
600	1.85
800	2.22
1,000	2.58
1,500	3.38
2,000	4.10
2,500	4.76
3,000	5.38
3,500	5.96
4,000	6.52
5,000	7.58
6,000	8.56
7,000	9.49
8,000	10.4
9,000	11.2
12,000	13.6
16,000	16.5
18,000	17.9
20,000	19.2
30,000	25.2
40,000	30.5
50,000	35.4
60,000 or more	40.0

3.5.2 Interpolation of the data in this table for process weight rates up to 6,000 lb./hr. shall be accomplished by use of the equation $E=4.10P^{0.67}$, E=rate of emission in lb./hr. and P=Process weight rate in tons/hr.

3.5.3 Process weight per hour is the total weight of all materials introduced into any specific process that may cause any discharge of particulate matter. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. For a cyclical or batch operation, the process weight per hour will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle. For a continuous operation, the process weight per hour will be derived by dividing the process weight for a typical period of time.

3.5.4 Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this regulation, the interpretation that results in the minimum value for allowable emission shall apply.

3.5.5 For purposes of the regulation, the total process weight from all similar process units at a plant or premises shall be used for determining the maximum allowable emission of particulate matter that passes through a stack or stacks.

NOTE: Specific regulations for large industrial sources are encouraged in order to more closely require use of the latest available control techniques. Consultation in developing such regulations is available from EPA upon request.

IV—CONTROL OF SULFUR COMPOUND EMISSIONS

4.1 Fuel Combustion.

4.1.1 No person shall burn, sell, or make available for sale for burning in fuel burning equipment, any fuel containing in excess of ------[1] percent sulfur by weight.

NOTE: This language is intended for application to small area sources, where fuel substitution is the only practical control method.

4.1.2 No person operating power and steam generating facilities having a power generating capacity in excess of 25 megawatts or a heat input greater than 250 million B.t.u./hr. shall emit in excess of ------[1] pounds of sulfur per million B.t.u. of heat input per hour.

NOTE: This language is intended for application to large fuel combustion sources, where installation of flue gas cleaning systems is feasible.

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[1] It is not possible to make nationally applicable generalizations about attainable degrees of control of sulfur oxides emissions from combustion sources. Availability of low-sulfur fuels varies from one area to another. In some areas, severe restrictions on the sulfur content of fuels could have a significant impact on fuel-supply patterns; accordingly, where such restrictions are necessary for attainment of national ambient air standards, adoption of phased schedules of sulfur-in-fuel limitations is recommended. Stack gas cleaning is feasible at large industrial combustion sources and steam electric power plants. Technology now being demonstrated will allow 80 percent removal of sulfur oxides from combustion gases of most existing boilers. It is reasonable to expect that these processes will be improved in the near future and thus permit attainment of 90 percent or greater collection efficiency at a wide range of boilers.

Alternative means of meeting requirements for the control of sulfur oxides emissions from fuel combustion sources include: Use of natural gas, distillate oil, low-sulfur coal, and low-sulfur residual oil; desulfurization of oil or coal; stack gas desulfurization; and restricted use, shutdown, or relocation of large existing sources.

In many areas of the country, regulations can be written requiring the following fuel characteristics: Distillate oil—0.1 percent sulfur; residual oil—0.3 percent sulfur; bituminous coal—0.7 percent sulfur. Because residual oil generally is obtained from overseas sources, its use ordinarily is restricted to areas accessible to water-borne transportation. There are limited tonnages of 0.7 percent sulfur coal available at the present time but only in certain areas of the country.

4.1.3 No person shall cause or permit the emission or combustion of any refinery process gas stream or any other process gas stream that contains H_2S in concentration greater than 10 grains per 100 cubic feet of gas without removal of the hydrogen sulfide in excess of this concentration.

4.2 Sulfuric Acid Plants.

4.2.1 No person should cause or permit sulfur dioxide tail gas emissions from sulfuric acid manufacturing plants to exceed 6.5 lb./ton of acid produced. The tail gas acid mist emissions are not to exceed 0.5 lb./ton of acid produced and the sulfur trioxide emission are not to exceed 0.2 lb./ton of acid produced.

4.3 Sulfur Recovery Plants.

4.3.1 No person shall cause or permit the sulfur oxide emissions from a sulfur recovery plant to exceed 0.01 pounds per pound of sulfur processed.

NOTE: Processes are being offered commercially that are capable of meeting the above emission level for sulfur recovery plants. Approximately 99.5 percent of the sulfur processed must be recovered to meet this regulation.

4.4 Nonferrous Smelters.

4.4.1 No person shall cause or permit emissions of sulfur oxides from primary nonferrous smelters to exceed that set forth according to the following equations.

Copper smelters: $Y=0.2X$.
Zinc smelters: $Y=0.564X^{0.85}$.
Lead smelters: $Y=0.98X^{0.77}$.

Where X is the total sulfur fed to the smelter in lb./hr. and Y is the allowable sulfur emissions in lb./hr.

NOTE: This rule in effect, requires removal of about 90 percent of the input-sulfur to the smelter.

4.5 Sulfite Pulp Mills.

4.5.1 No person shall cause or permit the total sulfite pulp mill sulfur oxide emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc. to exceed 9.0 lb. per air dried ton of pulp produced.

NOTE: This emission limit is being achieved with efficiently designed chemical recovery systems that are well integrated with the pulp mill and designed for maximum sulfur recovery.

V—CONTROL OF HYDROCARBON EMISSIONS FROM STATIONARY SOURCES

5.1 Storage of Volatile Organic Materials.

5.1.1 No person shall place, store, or hold in any stationary tank reservoir or other container of more than 40,000 gallons capacity any volatile organic compounds unless such tank, reservoir, or other container is a pressure tank capable of maintaining working pressures sufficient at all times to prevent vapor or gas loss to the atmosphere or is designed, and equipped with one of the following vapor loss control devices:

(a) A floating roof, consisting of a pontoon type, double deck type roof or internal floating cover, which will rest on the surface of the liquid contents and be equipped with a closure seal or seals to close the space between the roof edge and tank wall. This control equipment shall not be permitted if the volatile organic compounds have a vapor pressure of 11.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging or sampling devices shall be gas-tight except when tank gauging or sampling is taking place.

(b) A vapor recovery system, consisting of a vapor gathering system capable of collecting the volatile organic compound vapors and gases discharged and a vapor disposal system capable of processing such volatile organic vapors and gases so as to prevent their emission to the atmosphere and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.

(c) Other equipment or means of equal efficiency for purposes of air pollution control as may be approved by the Director.

(d) No person shall place, store, or hold in any stationary storage vessel more than 250-gallon capacity any volatile organic compound unless such vessel is equipped with a permanent submerged fill pipe or is a pressure tank as described in section 5.1.1 or is fitted with a vapor recovery system as described in section 5.1.1(b).

5.2 Volatile Organic Materials Loading Facilities.

5.2.1 No person shall load any volatile organic compounds into any tank, truck or trailer from any loading facility unless such loading facility is equipped with a vapor collection and disposal system or its equivalent, properly installed; in good working order; and in operation.

5.2.2 No person shall load any volatile organic compounds into any tank, truck or trailer unless such loading facility is equipped with a loading arm with a vapor collection adaptor, pneumatic, hydraulic, or other mechanical means shall be provided to force a vapor-tight seal between the adaptor and the hatch. A means shall be provided to prevent liquid organic compounds drainage from the loading device when it is removed from the hatch of any tank, truck or trailer, or to accomplish complete drainage before such removal. When loading is effected through means other than hatches, all loading and vapor lines shall be equipped with fittings which make vapor-tight connections and which close automatically when disconnected.

5.3 Volatile Organic Compound Water Separation.

5.3.1 No person shall use any compartment of any single or multiple compartment volatile organic compound water separation which compartment received effluent water containing 200 gallons a day or more of any equipment processing, refining, treating, storing, or handling volatile organic compounds unless such compartment is equipped with one of the following vapor loss control devices, properly installed, in good working order, and in operation:

(a) A container having all openings sealed and totally enclosing the liquid contents. All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

(b) A container equipped with a floating roof, consisting of a pontoon type, double deck type roof, or internal floating cover, which will rest on the surface of the contents and be equipped with a closure seal or seals to close the space between the roof edge and container wall. All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

(c) A container equipped with a vapor recovery system consisting of a vapor gathering system capable of collecting the hydrocarbon vapors and gases discharged and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere and with all container gauging and sampling devices gas-tight except when gauging or sampling is taking place.

(d) A container having other equipment of equal efficiency for purposes of air pollution control as may be approved by the Director.

5.4 Pumps and Compressors.

All pumps and compressors handling volatile organic compounds shall have mechanical seals or other equipment of equal efficiency for purposes of air pollution control as may be approved by the Director.

5.5 Waste Gas Disposal.

5.5.1 No person shall emit a waste gas stream from any ethylene producing plant into the atmosphere unless the waste gas stream is properly burned at 1,300° for 0.3 seconds or greater in a direct-flame afterburner equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level or an equally effective catalytic vapor incinerator also with pyrometer.

5.5.2 No person shall emit hydrocarbon gases to the atmosphere from a vapor blowdown system unless these gases are burned by smokeless flares, or an equally effective control device as approved by the Director.

5.6 Organic Solvents.

5.6.1 A person shall not discharge more than 15 pounds of organic materials into the atmosphere in any one day from any article, machine, equipment, or other contrivance in which any organic solvent or any material containing organic solvent comes into contact with flame or is baked, heated-cured, or heat-jolymerized, in the presence of oxygen.

5.6.2 A person shall not discharge more than 40 pounds of organic material into the atmosphere in any one day from any article, machine, equipment, or other contrivance used under conditions other than described in section 5.6.1, for employing applying, evaporating or drying any photochemically reactive solvent, as defined in section 5.6.11, or material containing such solvent, unless all organic materials discharged from such article, machine, equipment or other contrivance have been reduced to not more than 40 pounds in any one day.

5.6.3 Any series of articles, machines, equipment or other contrivances designed for processing a continuously moving sheet, web, strip, or wire which is subjected to any combination of operations described in section 5.6.1 or 5.6.2 involving any photochemically reactive solvent, as defined in section 5.6.11, or material containing such solvent, shall be subject to compliance with section 5.6.2. Where only nonphotochemically reactive solvents or material containing only nonphotochemically reactive solvents are employed or applied, and where any portion or portions of said series of articles, machines, equipment, or other contrivances involves operations described in section 5.6.1, said portions shall be collectively subject to compliance with section 5.6.1.

5.6.4 Emissions of organic materials to the atmosphere from the cleanup with photochemically reactive solvents, as defined in section 5.6.11, of any article, machine, equipment, or other contrivance described in section 5.6.1, 5.6.2, or 5.6.3, shall be included with the other emissions of organic materials from that article, machines, equipment, or other contrivance for determining compliance with this rule.

5.6.5 Emissions of organic materials to the atmosphere as a result of spontaneously continuing drying of products for the first 12 hours after their removal from any article, machine, equipment, or other contrivance described in section 5.6.1, 5.6.2, or 5.6.3, shall be included with other emissions of organic materials from that article, machine, equipment, or other contrivance, for determining compliance with this rule.

5.6.6. Emissions of organic materials into the atmosphere required to be controlled by section 5.6.1, 5.6.2, or 5.6.3, shall be reduced by:

(a) Incineration, provided that 90 percent or more of the carbon in the organic material being incinerated is oxidized to carbon dioxide, or

(b) Adsorption, or

(c) Processing in a manner determined by the Director to be not less than effective than (a) or (b) above.

5.6.7 A person incinerating, adsorbing, or otherwise processing organic materials pur-

suant to this rule shall provide, properly install, and maintain in calibration, in good working order and in operation, devices as specified in the authority to construct or the permit to operate, or as specified by the Director, for indicating temperatures, pressures, rates of flow, or other operating conditions necessary to determine the degree and effectiveness of air pollution control.

5.6.8 Any person using organic solvents or any materials containing organic solvents shall supply the Director, upon request and in the manner and form prescribed by him, written evidence of the chemical composition, physical properties, and amount consumed for each organic solvent used.

5.6.9 The provisions of this rule shall not apply to:

(a) The manufacture of organic solvents, or the transport or storage of organic solvents or materials containing organic solvents.

(b) The use of equipment for which other requirements are specified by 5.1, 5.2, 5.3, or which are exempt from air pollution control requirements by said rules.

(c) The spraying or other employment of insecticides, pesticides, or herbicides.

(d) The employment, application, evaporation, or drying of saturated halogenated hydrocarbons, or perchloroethylene.

5.6.10 For the purposes of this rule, organic solvents include diluents and thinners and are defined as organic materials which are liquids at standard conditions and which are used as dissolvers, viscosity reducers, or cleaning agents.

5.6.11 For the purposes of this rule, a photochemically reactive solvent is any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified below or which exceeds any of the following individual percentage composition limitations, referred to the total volume of solvent:

(a) A combination of hydrocarbons, alcohols, adehydes, esters, ethers, or ketones having an olefinic or cyclo-olefinic type of unsaturation: 5 percent;

(b) A combination of aromatic compounds with either or more carbon atoms to the molecule except ethylbenzene: 8 percent;

(c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the above groups of organic compounds, it shall be considered as a member of the most reactive chemical group, that is, that group having the least allowable percent of the total volume of solvents.

5.6.12 For the purposes of this rule, organic materials are defined as chemical compounds of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, etallic carbides, etallic carbonates, and ammonium carbonate.

5.7 Architectural Coatings.

5.7.1 A person shall not sell or offer for sale for use in containers of 1-quart capacity or larger, any architectural coating containing photochemically reactive solvent, as defined in 5.6.11.

5.7.2 A person shall not employ, apply, evaporate, or dry any architectural coating, purchased in containers of 1-quart capacity or larger, containing photochemically reactive solvent, as defined, in 5.6.11.

5.7.3 A person shall not thin or dilute any architectural coating with a photochemically reactive solvent, as defined in 5.6.11.

5.7.4 For the purposes of this rule, an architectural coating is defined as a coating used for residential or commercial buildings and their appurtenances; or industrial buildings.

5.8 Disposal and Evaporation of Solvents.

A person shall not, during any one day, dispose of a total of more than 1½ gallons of any photochemically reactive solvent, as defined in 5.6.11, or of any material containing more than 1½ gallons of any such photochemically reactive solvent by any means which will permit the evaporation of such solvent into the atmosphere.

NOTE: These various rules on hydrocarbon emission control cover the principal stationary source of hydrocarbon emissions. The type of rules needed in a particular region will depend on the nature of source distribution.

VI—CONTROL OF CARBON MONOXIDE EMISSIONS

6.1 Process Equipment.

No person shall emit the carbon monoxide gases generated during the operation of a grey iron cupola, blast furnace, or basic oxygen steel furnace unless they are burned at 1,300° F. for 0.3 seconds or greater in a direct flame afterburner or equivalent device equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level.

6.2 No person shall emit carbon monoxide waste gas stream from any catalyst regeneration of a petroleum cracking system, petroleum fluid coker, or other petroleum process into the atmosphere, unless the waste gas stream is burned at 1,300° F. for 0.3 seconds or greater in a direct-flame afterburner or boiler equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level.

NOTE: Carbon monoxide emitted from open burning and incineration is controlled by other regulations.

VII—CONTROL OF NITROGEN OXIDES EMISSIONS

7.1 Combustion Sources.

7.1.1 No person shall cause or permit emissions of nitrogen oxides from an oil or gas-fired boiler with a capacity of 250 million B.t.u./hr. or more and completed before the effective date of this regulation in excess of 0.30 pounds per million B.t.u. of heat input per hour.

7.1.2 No person shall cause or permit emissions of nitrogen oxides from a coal-fired boiler with a capacity of 250 million B.t.u. per hour or more in excess of 0.9 pounds per million B.t.u. of heat input per hour.

NOTE: The proposed requirement for oil and gas-fired plants is about equivalent to 200 p.p.m. by volume at 3 percent oxygen. The requirement for coal-fired plants is about equivalent to 500 p.p.m. by volume. These levels are expected to be achieved by design and operation changes in firing boilers.

7.2 Nitric Acid Manufacture.

No person shall cause or permit the emission of nitrogen oxides from nitric acid manufacturing plants in excess of 5.8 pounds per ton of acid produced.

APPENDIX C—MAJOR POLLUTANT SOURCES

CHEMICAL PROCESS INDUSTRIES

Adipic acid.
Ammonia.
Ammonium nitrate.
Carbon black.[1]
Charcoal.[1]
Chlorine.
Detergent and soap.[1]
Explosives (TNT and nitrocellulose).[1]
Hydrofluoric acid.[1]
Nitric acid.
Paint and varnish manufacturing.[1]
Phosphoric acid.[1]
Phthalic anhydride.
Plastics manufacturing.[1]
Printing ink manufacturing.[1]
Sodium carbonate.[1]
Sulfuric acid.[1]
Synthetic fibers.
Synthetic rubber.
Terephthalic acid.

FOOD AND AGRICULTURAL INDUSTRIES

Alfalfa dehydrating.[1]
Coffee roasting.[1]
Cotton ginning.[1]
Feed and grain.[1]
Fermentation processes.
Fertilizers.[1]
Fish meal processing.
Meat smoke houses.[1]
Starch manufacturing.[1]
Sugar cane processing.[1]

METALLURGICAL INDUSTRIES

Primary metals industries:
- Aluminum ore reduction.[1]
- Copper smelters.[1]
- Ferroalloy production.[1]
- Iron and steel mills.[1]
- Lead smelters.[1]
- Metallurgical coke manufacturing.[1]
- Zinc.[1]

Secondary metals industries:
- Aluminum operations.[1]
- Brass and bronze smelting.[1]
- Ferro alloys.[1]
- Gray iron foundries.[1]
- Lead smelting.[1]
- Magnesium smelting.[1]
- Steel foundries.[1]
- Zinc processes.[1]

MINERAL PRODUCTS INDUSTRIES

Asphalt roofing.[1]
Asphaltic concrete batching.[1]
Bricks and related clay refractories.[1]
Calsium carbide.[1]
Castable refractories.[1]
Cement.[1]
Ceramic and clay processes.[1]
Clay and fly ash sintering.[1]
Coal cleaning.[1]
Concrete batching.[1]
Fiberglass manufacturing.[1]
Frit manufacturing.[1]
Glass manufacturing.[1]
Gypsum manufacturing.[1]
Lime manufacturing.[1]
Mineral wool manufacturing.[1]
Paperboard manufacturing.[1]
Perlite manufacturing.[1]
Phosphate rock preparation.[1]
Rock, gravel, and sand quarrying and processing.[1]

PETROLEUM REFINING AND PETROCHEMICAL OPERATIONS[1]

WOOD PROCESSING[1]

PETROLEUM STORAGE
(STORAGE TANKS AND BULK TERMINALS)

MISCELLANEOUS

Steam electric power plants.[1]
Municipal or equivalent incinerators.[1]
Open burning dumps.[1]

[1] Major sources of sulfur oxides and/or particulate matter.

APPENDIX D—(POLLUTANT) EMISSIONS INVENTORY SUMMARY, TONS/YR. (EXAMPLE REGIONS AND WHERE EMISSION LIMITATIONS ARE DEVELOPED)

..... AIR QUALITY CONTROL REGION

DATA REPRESENTATIVE OF CALENDAR YEAR ...

Source category		State A				State B [1]				
	County 1	.....	.....	County N		State region total		Ditto	Region [1] total	
	II	III	II	III	II	III	II	III	Ditto	II	III
I. Fuel combustion—stationary sources:											
A. Residential fuel:											
1. Anthracite coal:											
a. Area sources											
b. Point sources											
2. Bituminous coal:											
a. Area sources											
b. Point sources											
3. Distillate oil:											
a. Area sources											
b. Point sources											
4. Residual oil:											
a. Area sources											
b. Point sources											
5. Natuarl gas:											
a. Area sources											
b. Point sources											
6. Wood:											
a. Area sources											
b. Point sources											
7. Other (specify):											
a. Area sources											
b. Point sources											
8. Total											
B. Commercial and institutional fuel:											
1. Anthracite coal:											
a. Area sources											
b. Point sources											
2. Bituminous coal:											
a. Area sources											
b. Point sources											
3. Distillate oil:											
a. Area sources											
b. Point sources											
4. Residual oil:											
a. Area sources											
b. Point sources											
5. Natural Gas:											
a. Area sources											
b. Point sources											
6. Wood:											
a. Area sources											
b. Point sources											
7. Other (specify):											
a. Area sources											
b. Point sources											
8. Total											
C. Industrial fuel:											
1. Anthracite coal:											
a. Area sources											
b. Point sources											
2. Bituminous coal:											
a. Area sources											
b. Point sources											
3. Coke:											
a. Area sources											
b. Point sources											
4. Distillate oil:											
a. Area sources											
b. Point sources											
5. Residual oil:											
a. Area sources											
b. Point sources											

APPENDIX D—(POLLUTANT) EMISSIONS INVENTORY SUMMARY, TONS/YR. (EXAMPLE REGIONS AND WHERE EMISSION LIMITATIONS ARE DEVELOPED)—Continued

Source category		State A				State B [1]				
	County 1	.....	.....	County N		State region total		Ditto	Region [1] total	
	II	III	II	III	II	III	II	III	Ditto	II	III
I. Fuel combustion—stationary sources—Continued											
C. Industrial fuel—Continued											
6. Natural gas:											
a. Area sources											
b. Point sources											
7. Process gas:											
a. Area sources											
b. Point sources											
8. Other (specify):											
a. Area sources											
b. Point sources											
9. Total											
D. Steam-electric power plant fuel (point sources only):											
1. Anthracite coal											
2. Bituminous coal											
3. Coke											
4. Distillate oil											
5. Residual oil											
6. Natural gas											
7. Process gas											
8. Other (specify)											
9. Total											
E. Total stationary fuel combustion											
II. Process losses:											
A. Area sources [1V]											
B. Point sources											
1. Chemical process industries											
2. Food and agricultural industries											
3. Metallurgical industries											
4. Mineral products industries											
5. Petroleum refining and petrochemical operations											
6. Wood processing											
7. Petroleum storage											
C. Total process losses											
III. Solid waste disposal:											
A. Incineration:											
1. On-site:											
a. Area sources											
b. Point sources											
2. Municipal, etc.:											
a. Area sources											
b. Point sources											
B. Open burning:											
1. On-site:											
a. Area sources											
b. Point sources											
2. Dumps:											
a. Area sources											
b. Point sources											
C. Other (specify):											
1. Area sources											
2. Point sources											
D. Total solid waste disposal											

See footnotes at end of table.

APPENDIX D—(POLLUTANT) EMISSIONS INVENTORY SUMMARY, TONS/YR. (EXAMPLE REGIONS AND WHERE EMISSION LIMITATIONS ARE DEVELOPED)—Continued

Source category	State A						State B [1]					
	County I		.....	.....	County N		State region total		Ditto	Region [2] total		
	ii	iii	ii	iii	ii	iii	ii	iii	Ditto	ii	iii	
IV. Transportation (area sources only):												
A. Motor vehicles:												
1. Gasoline powered [v]												
2. Diesel powered												
B. Off-highway fuel usage												
C. Aircraft												
D. Railroads												
E. Vessels												
F. Gasoline handling evaporative losses [vi]												
G. Other (specify)												
H. Total transportation												
V. Miscellaneous (area sources only):												
A. Forest fires												
B. Structural fires												
C. Coal refuse burning												
D. Agricultural burning												
E. Other (specify)												
F. Total miscellaneous												
VI. Grand totals												
A. Area sources												
B. Point sources												
C. Total												

[1] Included only if interstate region.
[ii] "Existing Emissions".
[iii] "Emissions Achieved" with control regulations of implementation plans. Must be submitted in example regions and where emission limitations are developed.
[iv] For hydrocarbons only, would include emissions for surface coating operations, dry cleaning, degreasing operations, etc., unless considered point sources.
[v] For hydrocarbons, would include vehicle evaporative losses.
[vi] For hydrocarbons only, would include losses from filling tank trucks, service station tanks, and automobile tanks.

APPENDIX E—POINT SOURCE DATA

(Does not need to be submitted with implementation plan but must be available for inspection by the Administrator, EPA.)

I. General Source Information.
A. Establishment name and address.
B. Person to contact on air pollution matters and telephone number.
C. Average number of employees.
D. Standard Industrial Classification (S.I.C.) Codes.
E. Land area at plant location, if available.
F. Operating Schedule:
1. Percent of annual production by season.
2. Days of week normally in operation.
3. Shifts or hours of day normally in operation.
4. Number of days per year in operation.
G. Year in which data are recorded.
H. Future activities, if available (e.g., addition of new or expansion of existing facilities, changes in production rate, installation of control equipment, phasing out of equipment, fuel change, etc.).
I. Map or general layout of large complex plants showing locations of various facilities, if available.[1]
II. Fuel Combustion.
A. Number of boilers.
B. Type of fuel burning equipment for each boiler.
C. Rated and/or maximum capacity of each boiler, 10^6 B.t.u./hr.
D. Types of fuel burned, quantities and characteristics.
1. Type of each fuel used and place of origin.
2. Maximum and average quantity per hour.
3. Quantity per year.
4. Sulfur content (as received), percent.
5. Ash content (as received), percent.
6. Heat content (as received), B.t.u./unit of measure.
7. Estimate of future usage, if available.
E. Percent used for space heating and process heat.
F. Air pollution control equipment (existing and proposed):
1. Type.
2. Collection efficiency (design and actual), percent.
G. Stack data:
1. List stacks by boilers served.
2. Location of stacks by grid coordinates (Universal Transverse Mercator, UTM, or equivalent).[1]
3. Stock height, ft.
4. Stack diameter (inside, top), ft.
5. Exit gas temperature, °F.
6. Exit gas velocity, f.p.s.
H. Emission data:
1. Based on emission factors.
2. Estimate of emissions by the source.
3. Results of any stack tests conducted.
III. Manufacturing Activities (Process Losses).
A. Process name or description of each product.
B. Flow diagram of each process indicating equipment capacities.
C. Quantity of raw materials used and handled for each product, maximum quantity per hour, and average quantity per year.
D. Quantity of each product manufactured, maximum quantity per hour, and average quantity per year.
E. Description of annual, seasonal, monthly, weekly, and daily operating cycle including downtime for maintenance and repairs.
F. Air pollution control equipment in use (existing and proposed):
1. Type.
2. Collection efficiency (design and actual), percent.
G. Stock data:
1. List of stacks by equipment served.
2. Location of stacks by grid location (UTM or equivalent).[2]

[1] Required only when diffusion modeling is utilized.

3. Stock height, ft.
4. Stack diameter (inside, top), ft.
5. Exit gas temperature, °F.
6. Exit gas velocity, f.p.s.
H. Emission data:
1. Based on emission factors.
2. Estimate of emissions by the source.
3. Results of any stack tests conducted.
IV. Solid Waste Disposal.
A. Amount and description of solid waste generated, quantity per year.
B. Percent of total that is combustible.
C. Method of disposal (on-site or off-site).
D. Description of on-site disposal method, if applicable (incineration, open burning, landfill, etc.) including maximum quantities disposed per hour and average quantities disposed per year and actual operating schedule.
1. Location of the source by a grid system (UTM or equivalent).[1]
2. If method of disposal is by an incinerator, include the following information:
a. Auxiliary fuel used.
b. Air pollution control equipment (existing and proposed):
(1) Type.
(2) Collection efficiency (actual and design), percent.
c. Stack data:
(1) List stacks by furnaces served.
(2) Stack height, ft.
(3) Stack diameter (inside, top), ft.
(4) Exit gas temperature, °F.
(5) Exit gas velocity, f.p.s.
(6) Exit gas moisture content, percent if available.
3. Emission data:
a. Based on emission factors.
b. Estimate of emissions by the source.
c. Results of any stack tests conducted.

APPENDIX F—AREA SOURCE DATA [1]

(Does not need to be submitted with implementation plan but must be available for inspection by the Administrator, EPA)
Grid Coordinate (lower left-hand corner) ——————, UTM or equivalent.[2]
Average Stack Height of Sources——————.[3]
I. Fuel Combustion—Stationary Sources (includes sulfur and ash content of fuels, if applicable).
A. Residential Fuel:
1. Anthracite Coal (plus type and size of unit)[4]—tons/year.
2. Bituminous Coal (plus type and size of unit)—tons/year.
3. Distillate Oil (plus type and size of unit)—10^3 gal./year.
4. Residual Oil (plus type and size of unit)—10^3 gal./year.
5. Natural Gas (plus type and size of unit)—10^6 cu.-ft./year.
6. Wood—tons/year.
7. Other—please specify.

[1] Emissions data for all source categories and subcategories listed below would be summarized in the implementation plans as is in Appendix D or G.
[2] Data would be required on a grid basis only when diffusion modeling is utilized. For proportional model technique, data must be available only on a county basis.
[3] Required only when diffusion modeling is utilized.
[4] Average type and size for each category. This is used as the basis for selection of average emission factor.

B. Commercial and Institutional Fuel.
1. Anthracite Coal (plus type and size of unit)—tons/year.
2. Bituminous Coal (plus type and size of unit)—tons/year.
3. Distillate Oil (plus type and size of unit)—10^3 gal./year.
4. Residual Oil (plus type and size of unit)—10^3 gal./year.
5. Natural Gas (plus type and size of unit)—10^6 cu.-ft./year.
6. Wood—tons/year.
7. Other—please specify.
C. Industrial Fuel:
1. Anthracite Coal (plus type and size of unit)—tons/year.
2. Bituminous Coal (plus type and size of unit)—tons/year.
3. Coke (plus type and size of unit)—tons/year.
4. Distillate Oil (plus type and size of unit)—10^3 gal/year.
5. Residual Oil (plus type and size of unit)—10^3 gal/year.
6. Natural Gas (plus type and size of unit)—10^6 cu.-ft./year.
7. Wood—tons/year.
8. Other—please specify.
II. Process Losses (hydrocarbons only).
A. Surface coating operations, dry cleaning, degreasing operations, etc., unless considered as point sources—appropriate basis for emission estimate
III. Solid Waste Disposal.
A. On-site incineration (plus type of unit)—tons/year.
B. Open burning—tons/year.
C. Other—specify.
IV. Transportation.
A. Gasoline-powered motor vehicles—appropriate basis for emission estimate, including hydrocarbon evaporative losses.
B. Diesel-powered motor vehicles—appropriate basis for emission estimate.
C. Off-highway fuel usage—10^3 gal/year.
D. Aircraft—number of flights per year per type of aircraft.
E. Railroads—10^3 gal diesel oil/year.
F. Vessels—10^3 gal. oil/year, tons of coal/year, or tons of wood/year (includes sulfur and ash content of fuel, if applicable).
G. Gasoline handling evaporative losses—appropriate basis for hydrocarbon emission estimate from filling tank trucks, service station tanks, and automobile tanks.
H. Other—specify.
V. Miscellaneous.
A. Forest fires—appropriate basis for emission estimate.
B. Structural fires—appropriate basis for emission estimate.
C. Coal refuse burning—appropriate basis for emission estimate.
D. Agricultural burning—appropriate basis for emission estimate.
E. Other—specify.

APPENDIX G—(POLLUTANT) EMISSIONS INVENTORY SUMMARY, TONS/YR. (REGIONS WHERE EMISSION LIMITATIONS ARE NOT DEVELOPED)

---------- AIR QUALITY CONTROL REGION

DATA REPRESENTATIVE OF CALENDAR YEAR ----

Source category	State A			State B[i]		
	County 1	----------	County N	State region total	Ditto	Regional i total
	[ii]	[ii]	[ii]	[ii]	Ditto	[ii]
I. Fuel combustion—Stationary sources:						
A. Area sources [iii]						
B. Point sources						
C. Total						
II. Process losses:						
A. Area sources [iii, iv]						
B. Point sources						
1. Chemical process industries						
2. Food and agricultural industries.						
3. Metallurgical industries						
4. Mineral products industries						
5. Petroleum refining and petrochemical operations.						
6. Wood processing						
7. Petroleum storage						
C. Total						
III. Solid waste disposal:						
A. Area sources [iii]						
B. Point sources						
C. Total						
IV. Transportation:						
(Area Sources only) [iii, v]						
V. Miscellaneous:						
(Area Sources only) [iii]						
VI. Grand totals:						
A. Area sources [iii]						
B. Point sources						
C. Total						

[i] Included only if interstate region.
[ii] Existing Emissions.
[iii] If not available, does not need to be submitted for Priority III regions.
[iv] For hydrocarbons only, would include emissions for surface coating operations, dry cleaning, degreasing operations, etc., unless considered point sources.
[v] For hydrocarbons would include vehicle evaporative losses and losses from filling tank trucks, service station tanks, and automobile tanks.

APPENDIX H—AIR QUALITY DATA SUMMARY

Pollutant	Sampling site location [1]	Sampling interval (months)	Start date	End date	Number of samples	Maximum 1-hour	Maximum 3 hours, 6–9 a.m.	Maximum 8 hours	Maximum 24 hours	Annual arith. mean	Std. dev.	Annual geo. mean	Geo. std. dev.
Particulate matter	X	X	X	X	X				X	X	X	X	X
Sulfur oxides (as SO_2)	X	X	X	X	X				X	X	X	X	X
Nitrogen dioxide	X	X	X	X	X				X	X	X	X	X
Photo-chemical oxidants	X	X	X	X	X	X				X	X	X	X
Carbon monoxide	X	X	X	X	X	X		X		X	X	X	X
Hydrocarbons	X	X	X	X	X		X			X	X	X	X

X = Data or information required.
[1] UTM Grid coordinate or equivalent.

APPENDIX I—PROJECTED MOTOR VEHICLE EMISSIONS

The assumptions listed below were made in calculating the projected national urban emissions from motor vehicles as shown in Figures 1–3.

a. Emission factors are based on the new Federal test procedure (1), which has an average route speed of 18 miles per hour.

b. Emission control devices are assumed to just meet present and proposed standards when new, but deteriorate with age. Deterioration factors are adopted from data given in Reference 2.

c. Increases in urban vehicle-miles of travel for automobiles from Reference 3.

d. Distribution of automobiles by age from Reference 4.

e. Relative miles of travel for automobiles (i.e., new cars are driven more than older ones) from Reference 5.

f. Vehicle-mile projections for trucks from Reference 6.

g. Efficiency of retrofit devices is based on data reported by General Motors Corp., Reference 7, Ford Motor Co., Reference 8, and Chrysler Corp., Reference 9 for the retrofits kits supplied by each manufacturer. The Ford and Chrysler figures also include the effect of a tuneup. The following reduction figures are considered representative of emission reduction capabilities of retrofit devices:

HC—50%
CO—37%
NO_x—40%

Retrofit was considered only for pre-1968 automobiles. These devices were assumed to deteriorate in the same way as factory-installed control devices.

Figures 1–3 can be used to approximate air quality levels resulting from the Federal Motor Vehicle Control Program and retrofitting of all pre-1968 automobiles. The following equation calculates the expected air quality concentration for any given year.

$$A.Q._1 = A.Q._0 \left[\frac{(E_1)}{E_0} F_0 + (1 - F_0)(GF) \right]$$

where:

Subscripts 0 and 1 denote the base year and future year of interest, respectively.

A.Q. = Air quality (measured or estimated) in region.

E = Normalized emissions from Figures 1–3.

F = Fraction of motor vehicle emissions to total emissions of each pollutant in region.

GF = Growth factor for emission increases from stationary sources.

This equation can be applied directly for carbon monoxide and also for nitrogen dioxide (if all nitrogen oxides emissions are assumed to be measured as nitrogen dioxide). Use of this equation to calculate future photochemical oxidant levels requires an assumption as to how photochemical oxidant varies with hydrocarbon levels. If it is assumed that any increase or decrease in hydrocarbon emissions will result in a proportional increase or decrease in photochemical oxidant, then the equation can be used relatively easily. The emission data (E, F, and GF) should be for hydrocarbons, while the base year air quality should be measured photochemical oxidant concentrations. From the estimated photochemical oxidant air quality, the percent hydrocarbon reduction necessary to achieve the national ambient air quality standard is obtained from Appendix J.

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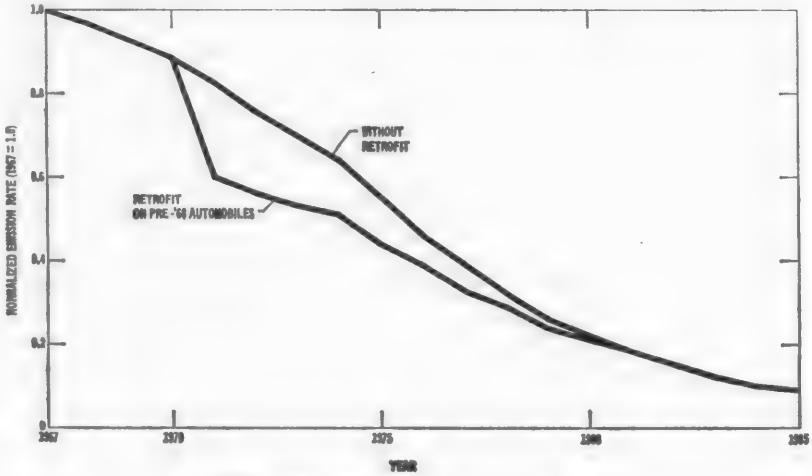

Figure 1. Projected national urban normalized hydrocarbon emissions.

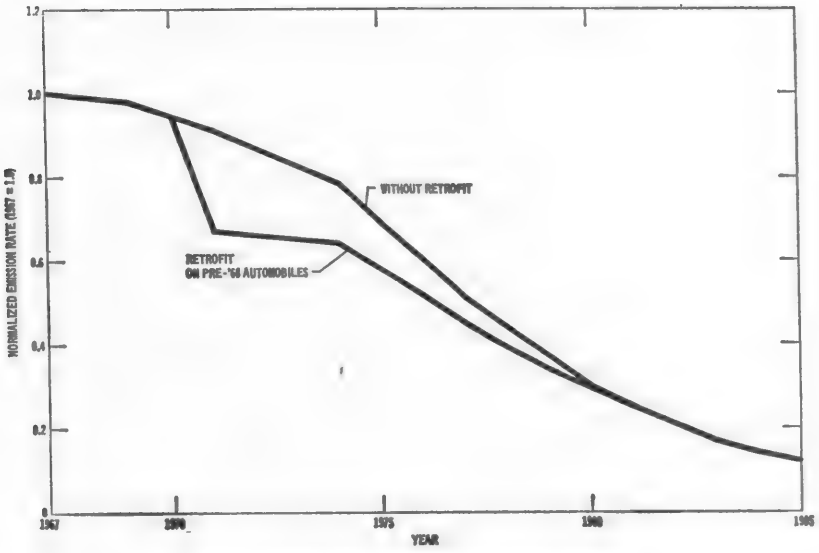

Figure 2. Projected national urban normalized carbon monoxide emissions.

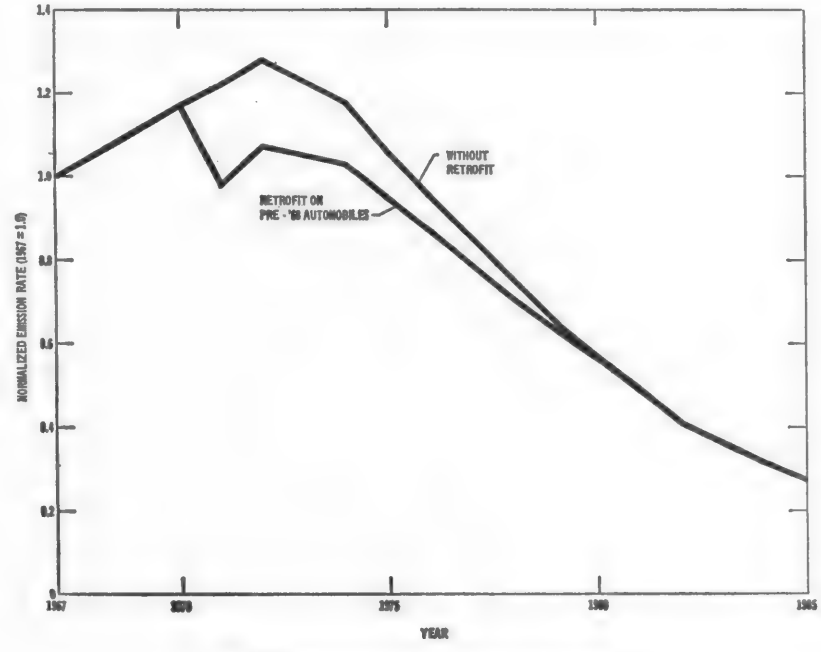

Figure 3. Projected national urban normalized nitrogen oxides emissions.

APPENDIX J—REQUIRED HYDROCARBON EMISSION CONTROL AS A FUNCTION OF OXIDANT CONCENTRATION

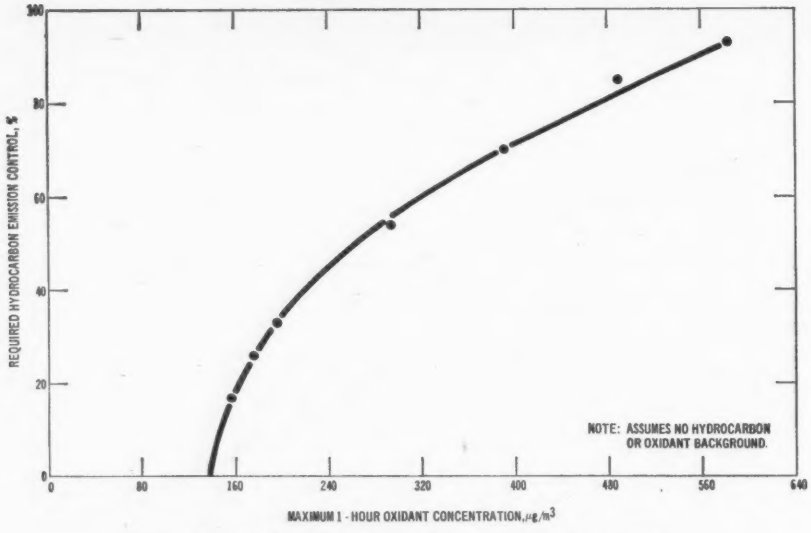

Figure 1. Required hydrocarbon emission control as a function of oxidant concentration.
REFERENCE: AIR QUALITY CRITERIA FOR NITROGEN OXIDES, ENVIRONMENTAL PROTECTION AGENCY, AIR POLLUTION CONTROL OFFICE, WASHINGTON, D.C., JANUARY 1971

APPENDIX K—CONTROL AGENCY FUNCTIONS

Man-year estimates by function for State of _____ portion of _____ AQCR.

Function	Year							
	Present							
	State agency	Local agencies	State agency	Local agencies	State agency	Local agencies	State agency	Local agencies
Enforcement services								
(Subtotal)								
Scheduled inspections								
Complaints and field patrol								
Engineering services								
(Subtotal)								
Permit system								
Emission estimates								
Source testing								
Reports, new legislation, etc.								
Technical services								
(Subtotal)								
Operation of monitoring network								
Special studies								
Instrument Calibration and Maintenance								
Laboratory operations								
Data processing								
Management services								
(Subtotal)								
Policy, P/R, Strategies, etc.								
Staff training								
Administrative and clerical support								
Totals								

Fund estimates for State of _____ portion of _____ AQCR.
(Funds in $1,000)

Function	Year							
	Present							
	State Agency	Local agencies	State agency	Local agencies	State agency	Local agencies	State agency	Local agencies
Enforcement services								
Operating funds								
Capital funds								
Contract funds								
Engineering services								
Operating funds								
Capital funds								
Contract funds								
Technical services								
Operating funds								
Capital funds								
Contract funds								
Management services								
Operating funds								
Capital funds								
Contract funds								
Total operating funds								
Total capital funds								
Total contract funds								
Total funds								

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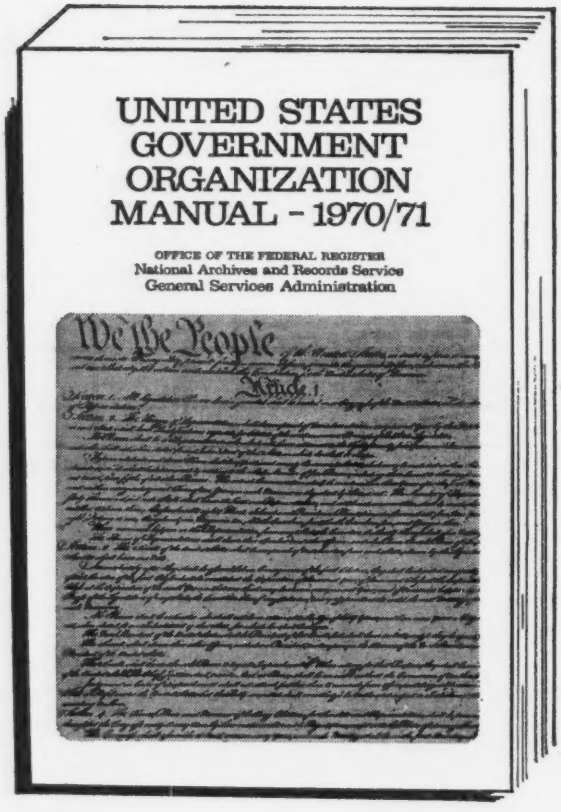

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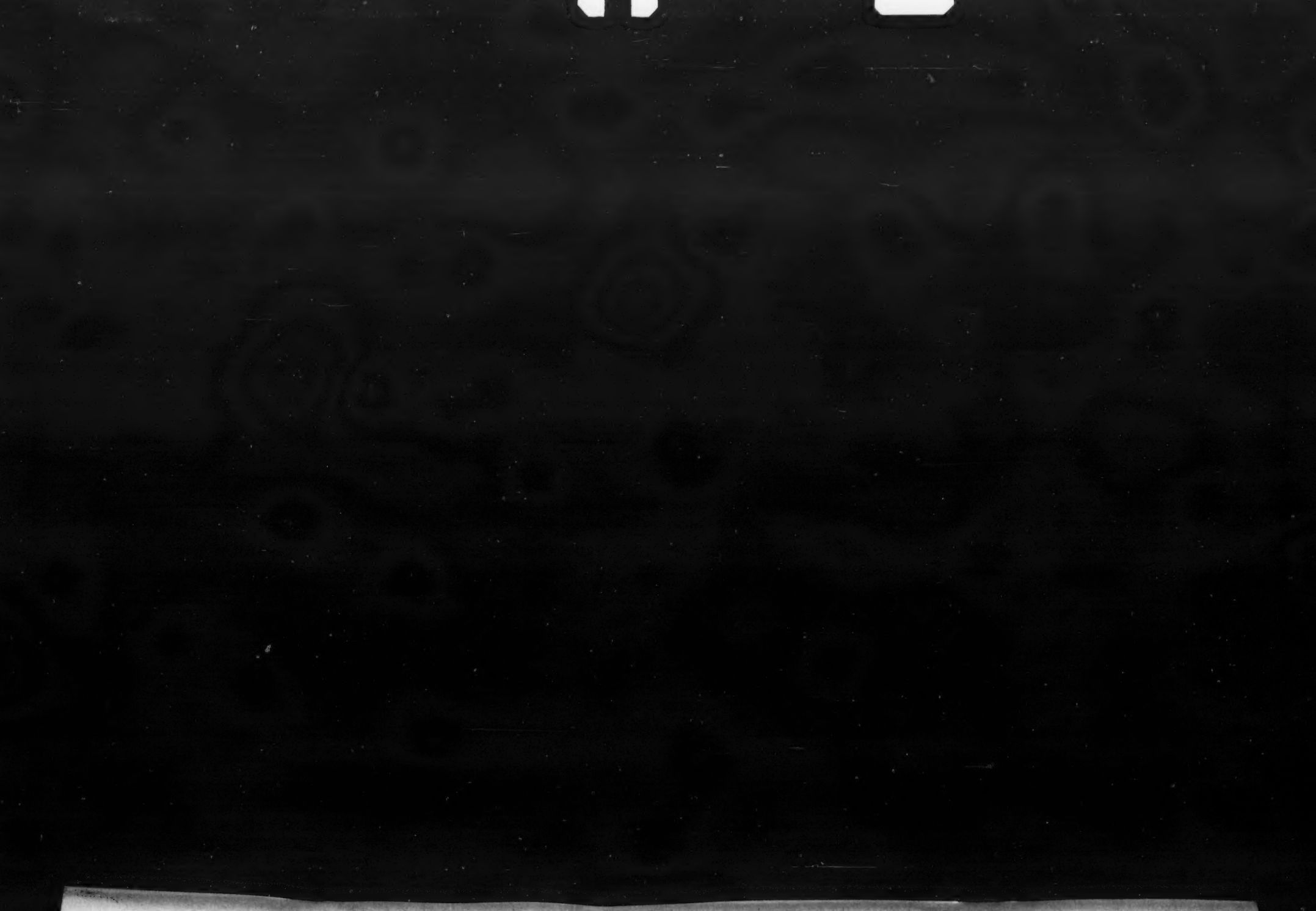
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